

April 5, 2013

## **Global Automakers Responses to House Energy and Commerce Committee's Stakeholder Questions Regarding the Renewable Fuel Standard**

Global Automakers provides the following responses to the Committee's questions regarding the Renewable Fuel Standard (RFS). These responses reflect the perspective of motor vehicle manufacturers<sup>1</sup> and are based on currently available information. Global Automakers supports sensible, effective measures to address global climate change and enhance energy security. However, we have several concerns regarding the introduction of mid-level ethanol blends in the market, as noted in the following responses:

### **Stakeholder Questions and Comments**

1. To what extent was the blend wall anticipated in the debate over the Energy Policy Act of 2005 and the Energy Independence and Security Act of 2007?

**Response 1:** The need for mid-level ethanol blends was considered in the development of EISA. See, for example, section 244 of EISA, which provides for infrastructure grants for mid-level blends. See also section 251, regarding EPA waivers for new fuels and additives, which modified existing language to specify that EPA must consider the effects of the new fuel or additive on nonroad engines and vehicles, which were known to have compatibility issues with mid-level blends.

Congress could not however have foreseen a number of significant events, including the current prolonged recession, the doubling of fuel economy standards, near-zero cellulosic ethanol production, greatly increased domestic oil production, and a declining demand for gasoline due to better fuel economy when they considered the blend wall and mid-level blends in EISA. Considering these changed circumstances, the RFS should be reevaluated.

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<sup>1</sup> The Association of Global Automakers represents international motor vehicle manufacturers, original equipment suppliers and other automotive-related trade associations. These companies have invested \$40.2 billion in U.S. based production facilities, directly employ more than 82,000 Americans, and sell 41 percent of all new vehicles purchased annually in the United States. Our members operate more than 230 production, design, R&D, sales, finance and other facilities across the United States. For more information, visit [www.globalautomakers.org](http://www.globalautomakers.org).

2. What are the benefits and risks of expanded use of E15 to automakers, other gasoline powered equipment makers, refiners, fuel retailers, and others involved in the manufacture and sale of gasoline and gasoline-using equipment?

**Response 2:** The primary societal benefits associated with greater use of domestically produced renewable fuels such as E15 in passenger vehicles and gasoline powered engines relate to energy security and potential greenhouse gas emissions reductions. Greater ethanol content in gasoline displaces petroleum content. This displacement allows greater reliance on domestic fuel sources and less reliance on imported oil from unstable parts of the world. In addition, to the extent that ethanol is produced from renewable resources, lower lifecycle emissions of greenhouse gases may result, assuming the process for producing and transporting the ethanol does not result in the usage of greater amounts of carbon-based fuel. Global Automakers supports efforts to address energy security and climate change. We note, however, that in the near to mid-term corn ethanol (with its maximum 20% greenhouse gas (GHG) reduction) will be the dominant biofuel for the next 5-10 years, displacing not only imported but domestic oil.

Expanding the use of E15 to vehicles that were not manufactured, certified or warranted for E15 use raises the potential for serious, emissions and performance problems. Global Automakers and its members are concerned that EPA prematurely and improperly granted partial waivers permitting E15 to be used in model year (MY) 2001-and-newer vehicles and engines. In our view, there is insufficient evidence to support using E15 in the current vehicle fleet for which its use has been approved by EPA, and there is a substantial risk that E15 will be used in older vehicles and engines for which it has not been approved.

Vehicle manufacturers face three direct risks associated with the introduction of E15 fuel into the market:

- First, manufacturers are required by the Clean Air Act and implementing regulations to warrant that their vehicles will comply with applicable emissions standards and must remedy any emissions' failure at no cost to the owners. Available data suggests that some MY2001-and-newer vehicles will, over time, fail to comply with applicable emissions standards when fueled with E15, thus subjecting auto manufacturers to costly recalls and repair obligations.
- Second, the use of E15 over time degrades engine components and emission controls and impairs performance in vehicles and engines not designed for that fuel (see discussion in Response 3 below). Therefore, auto manufacturers will be required to expend additional resources and costs for their MY2001-and-newer vehicles to evaluate the real-world impact that E15 will have on their products, and to determine what actions—such as component upgrades or changes to customer advisories—

should be taken to address those impacts now that EPA has authorized owners to use E15 in those vehicles, and then to implement those actions.

- Third, and as discussed in greater detail below, experience teaches us that there is a significant chance that consumers will intentionally or unintentionally use a non-approved fuel if there is a price difference as small as a few cents per gallon. E15 is projected to cost less on a per gallon basis than E10. As a consequence, there is a high likelihood that at least some owners of MY2000 and older vehicles will use E15 even though EPA has not approved E15 for use in such vehicles. This risk is exacerbated by EPA's refusal to require that legacy E10 fuel continue to be available for at least the immediate future.

Another issue yet to be sufficiently studied is the potential negative impact E15 would have on the fuel production, distribution and marketing infrastructure. In particular, EPA should fully evaluate how the addition of a new blend of fuel will affect service station storage and pump systems and the ability of customers to select the right fuel for his or her vehicle.

3. What are the risks of the introduction and sale of E15 to the owners of pre-2001 motor vehicles, boats, motorcycles, and other gasoline-powered equipment not approved to use it? Are there risks to owners of post-2001 vehicles? How do these risks compare to the benefits of the RFS?

**Response 3:** We have very serious concerns about the potential product damage, emissions increases, and related liabilities, including possible safety or emissions recalls, and warranty claims, which could be caused by the use of a fuel for which legacy vehicles and engines were not designed. As explained in greater detail in our response to Question 7, even though EPA's partial waiver does not apply to pre-2001 vehicles, EPA has not adequately protected against the risk of misfueling. Unlike the situation with leaded fuel several years ago, where different nozzles were required for leaded and unleaded (which we note mitigated but did not eliminate misfueling), EPA is relying solely on labeling and public education. Further, EPA has made no provision to ensure that E10 fuel is available for the legacy vehicles and engines that cannot use E15.

Underscoring our concerns about the impact of E15 fuel on legacy vehicles and engines, an April 2012 report by FEV, Inc, describing the results of testing performed for the Coordinating Research Council (CRC), revealed that adverse results were produced when E15 fuel was used in certain popular, high-volume models of cars. Problems included damaged valves and valve seats, which can lead to loss of compression and power,

diminished vehicle performance, misfires, engine damage, as well as poor fuel economy and increased emissions.<sup>2</sup>

Another CRC report issued in January 2013 focused on the effect of E15 fuel on fuel system components of model year 1996 through 2009 vehicles. The study found that “some fuel systems in modern vehicles survive testing in mid-blend ethanol fuels, while others will experience complete failures that would prevent operation. The fuel pumps and level senders that failed or exhibited other effects during testing on E15 are used on a substantial number of the 29 million 2001 – 2007 model year vehicles represented by the components evaluated in this report.”<sup>3</sup>

These findings by the CRC add to the body of knowledge on the effects of higher blends of ethanol. No fewer than ten research papers have been published on the effects of increasing the ethanol blend ratio to E15 from the current E10. For example, in a study by the Oak Ridge National Laboratory on the impact on fuel dispensers, all gaskets, seals and O-rings swelled and showed effects that can result in leaks. In another study, the National Renewable Energy Laboratory (NREL) tested samples of service station equipment, and found that, on average, about half of the equipment failed the compatibility tests. Another NREL study found severe damage to marine engines run on E15.

The Clean Air Act requires producers of any new fuel or fuel additive to show that those fuels will not contribute to the failure of vehicles or engines to meet emissions standards. Most vehicles currently being driven by American consumers were not designed to operate on ethanol blends greater than E10. As indicated by the studies described above, we believe the use of higher blends such as E15 will cause a range of problems that could result in increased automotive emissions. These problems include the potential for immediate harm to, or failure of, highly calibrated emission control systems that were not designed to operate on such ‘mid-level’ fuels as E15. Further, many vehicles today are equipped with onboard diagnostic (OBD) systems as part of an integrated emissions control system. Testing to determine how the long term use of E15 may negatively affect the proper operation of OBD systems is incomplete at this time.

The use of E15 will have consequences that extend beyond the failure to sufficiently control emissions. It will also create a high risk of consumer dissatisfaction due to drivability problems which would needlessly damage product reputation and imperil customer

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<sup>2</sup> To view this report, see <http://www.crao.com/reports/recentstudies2012/CM-136-09-1B%20Engine%20Durability/CRC%20CM-136-09-1B%20Final%20Report.pdf>. The Coordinating Research Council (CRC) is a non-profit organization that directs engineering and environmental studies on the interaction between automotive and other mobility equipment and petroleum products. It is supported by automakers and the American Petroleum Institute.

<sup>3</sup> See <http://www.crao.com/reports/recentstudies2013/CRC%20664%205BAVFL-15a%5D/AVFL%2015a%205BCRC%20664%5D%20Final%20Report%20only.pdf>.

satisfaction with dealer service. Such drivability problems may also tempt consumers to tamper with emission controls in an effort to improve performance. Owner satisfaction may be further jeopardized by the reduction of fuel economy they will experience as a consequence of switching from E10 to E15, since the ethanol portion of the fuel has less energy content than the displaced gasoline.

4. What is the likely impact, if any, of the blend wall on retail gasoline prices?

**Response 4:** We defer to fuel providers on this matter.

5. What is the timing of the implementation challenges related to the blend wall? Will some entities face difficulties earlier than others?

**Response 5:** With regard to motor vehicles, the long lifetime of vehicles presents inevitable problems regarding fuel specification changes. With respect to emissions standards, vehicles are designed and certified to be compatible with known (i.e., existing) fuel specifications. If fuel specifications are changed after vehicles are produced but while those vehicles have significant expected remaining useful life, there is no guarantee that those vehicles can operate on the new fuel without significant negative consequences.

6. Could the blend wall be delayed or prevented with increased use of E85 in flexible fuel vehicles? What are the impediments to increased E85 use? Are there policies that can overcome these impediments?

**Response 6:** Theoretically, expanding the use of E85 in flex-fuel vehicles (FFVs) has the potential to push back the blend wall, but there are a number of significant challenges associated with this approach. For instance, even though there are several million FFVs currently on the road and in use today, E85 fuel is generally unavailable in most of the country. This means an expanded infrastructure – necessary because of the more corrosive nature of E85 fuel – would be needed. Implementing such an expansion will of course be tremendously costly and time consuming. Transportation costs are also significant, since E85 cannot be transported *via* fuel lines and must be moved by tanker truck, adding cost and creating logistical challenges.

Fuel pricing is critical to the widespread use of E85 fuel. The fact that E85 has significantly lower energy content (compared to E10 or E15 gasoline) means that E85 capable vehicles travel fewer miles per tank-full than they can using conventional gasoline. Consumers, as a result, often avoid this fuel even in areas where it is available. Unless the lower fuel

economy levels associated with E85 use are fully reflected in its retail price, consumers may not view it as an acceptable alternative to gasoline. To be viewed by consumers as a superior alternative, E85 may need to be priced even more aggressively than other available alternatives.

Efforts have been and continue to be made to address some of these issues legislatively by mandating the manufacture and sale of FFVs capable of running on E85 fuel. Global Automakers opposes any mandated increase in the number of FFVs because government policies work best when they are technology neutral and because FFVs cannot meet the stringent SULEV or PZEV emissions standards in California and those states that have adopted the California tailpipe standards. Moreover, producing more FFVs would produce no real benefits unless and until E85 fuel becomes more widespread and is priced at a level attractive to consumers.

7. Is E15 misfueling unavoidable? Are there lessons from the labeling and dispensing of diesel, E85 and other fuels that prevent their misfueling that can also be applied to E15? What specific actions are companies taking to address potential misfueling concerns under MMPs?

**Response 7:** While some misfueling is likely unavoidable, it is clear that the EPA label-based misfueling mitigation regulations will not effectively prevent most intentional or unintentional misfueling. EPA needs to consider other misfueling mitigation strategies. A credible program should include extensive consumer outreach to educate the public on fuel pricing, energy content, and manufacturer warranty information, while pursuing other prospective technical solutions to avoid misfueling and the environmental and safety consequences it causes. Moreover, EPA's decision not to require that a sufficient supply of E10 legacy fuel be available will leave some consumers left with no choice but to misfuel.

The importance of effective protections against misfueling was underscored by the results of a survey recently completed by the AAA. This survey found that as much as 95 percent of the driving public has not even heard of E15 fuel, creating a strong possibility that consumers will use the wrong fuel for their vehicle. With only about 12 million vehicles out of the more than 240 million light duty vehicles on the roads today designed to tolerate ethanol levels higher than E10, AAA also concluded that "sustained use of E15 in both newer and older vehicles could result in significant problems such as accelerated engine wear and failure, fuel-system damage and false "check engine" lights" for any vehicle not approved by its manufacturer to use E15."<sup>4</sup>

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<sup>4</sup> See <http://newsroom.aaa.com/2012/11/new-e15-gasoline-may-damage-vehicles-and-cause-consumer-confusion>.



Additional reasons for our concerns are:

- A) Consumers already face information overload at the gas pump. In addition to the normal product, price, and octane ratings, there are warnings about cell phone use, static electricity, using unapproved portable fuel containers, and refueling with the engine running. There is information about credit cards, “easy passes,” and “paying before you pump.” Additionally, some States have labeling requirements, and pumps are extensively used for advertising, including signs, scrolling messages on screens, and even audio messages.
  - B) Pricing is a particular concern. Many consumers decide which brand and type of gasoline to buy based solely on price. Since E15 contains less energy per gallon than E10 or E0, it should be less expensive per gallon. This could cause many consumers to buy it simply because it is cheaper, regardless of the vehicles they drive or that they are filling a portable container for their lawn mowers.
  - C) This same pricing issue is a major concern regarding blender pumps for consumers who may unwittingly choose E20 or E40 because it’s cheaper per gallon.
  - D) The fact that E15 contains less energy per gallon presents another issue related to fuel economy. Less energy per gallon means lower fuel economy. Consumers will need to recognize this fact or they will blame the vehicle or the manufacturer for this decrease in fuel economy.
  - E) Lower energy content also means reduced driving range and more frequent trips to the gas station. Again, consumer information is needed.
  - F) One major concern is the continued availability of E10 and E0 fuels in the marketplace for legacy vehicles. Fuel stations have a limited number of dispensers and storage tanks. If retail outlets choose to move to E15, there may be a limited ability to continue to provide the E10 and E0 needed for many vehicles and engines.
8. Can blend wall implementation challenges be avoided without changes to the RFS? Is the existing EPA waiver process sufficient to address any concerns? If the RFS must be changed to avoid the blend wall, what should these changes entail? Should any changes include liability relief or additional consumer protections for addressing misfueling concerns?

**Response 8:** It appears unlikely that these challenges can be avoided without statutory changes. However, the liability relief measures that have been proposed to date would not protect consumers or vehicle manufacturers, in our view.

The RFS is heavily focused on adding renewable content to gasoline. However, gasoline demand is currently dropping.<sup>5</sup> That means that as the gasoline pool shrinks, the volumetric requirements of the RFS lead to ever higher ethanol content levels.

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<sup>5</sup> See Table 11: [http://www.eia.gov/forecasts/aeo/er/tables\\_ref.cfm](http://www.eia.gov/forecasts/aeo/er/tables_ref.cfm)

RFS targets that align more closely with current trends in U.S. fuel and petroleum demand and use would be desirable. These fuel demand changes potentially justify increased emphasis in the RFS on biodiesel fuel. Also, adopting percentage blend targets in the RFS rather than the current absolute volume targets would provide opportunities to more directly consider the compatibility of fuels meeting the RFS with vehicle fuel system technology and infrastructure. In our view, incentives for the production of drop-in fuels, which do not present compatibility problems with vehicle fuel systems and fueling infrastructure, would be appropriate.

9. Have the 2017 and Later Model Years Light Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy standards for cars and light trucks changed the implementation outlook of the RFS?

**Response 9:** Because the RFS requires the use of a certain number of gallons of renewable fuel in the nation's fuel supply (as opposed to a percentage), the increasingly stringent CAFE and GHG standards will make the RFS volume targets even more difficult to meet as they reduce total fuel consumption. Similarly, as State sales mandates for Zero Emission Vehicles phase in, a further reduction in the volume of fuel sold will occur. In order to meet the RFS volume targets, higher renewable content percentage levels may be required as total fuel consumption decreases. Such higher blends, however, are not compatible with gasoline vehicles and engines.

10. What other methods, including the use of drop-in fuels, are available to industry to ease the challenge posed by the blend wall?

**Response 10:** If the renewable content were made up of drop-in components that would not require redesigning the vehicle or engine, there would, by definition, be no fuel compatibility concerns.

11. What are the impacts on renewable fuel producers if the RFS is changed to avoid the blend wall?

**Response 11:** We have no specific data on this matter.





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April 5, 2013

Representative Fred Upton  
Chairman  
House Committee on Energy and Commerce  
2125 Rayburn House Office Building  
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Representative Henry Waxman  
Ranking Member  
House Committee on Energy and Commerce  
2322 Rayburn House Office Building  
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Dear Chairman Upton and Ranking Member Waxman:

Growth Energy is the leading trade association for America's ethanol producers and supporters. Growth Energy promotes expanding the use of ethanol in gasoline, decreasing our dependence on foreign oil, and creating American jobs. As such, we are pleased to submit these comments in response to your questions for stakeholder comment released on March 20, 2013.

Sincerely,

Tom Buis  
CEO, Growth Energy

**1. To what extent was the blend wall anticipated in the debate over the Energy Policy Act of 2005 and the Energy Independence and Security Act of 2007?**

The Renewable Fuel Standard (RFS) was enacted to reduce our dependence on foreign oil, improve our environment and support homegrown, American made biofuels. With the goal of the RFS to reach 36 billion gallons of renewable fuel by 2022, it was clear higher blends of ethanol would be required even with reduced consumption. However, other than the use of ethanol to blend E10, the oil industry has done nothing but erect hurdles to higher blends of ethanol.

Over four years ago, Growth Energy led the way by filing a waiver with the U.S. EPA to allow the sale of ethanol blends up to E15, and the oil industry has fought these blends every step of the way. Oil companies have further exacerbated the “blend wall” by trying to eliminate the RFS, fighting E15 in court, refusing to market E15 and discouraging investment in infrastructure designed to let consumers choose higher ethanol blends. Clearly when the RFS was first created, it was apparent that our nation’s energy infrastructure and economy needed a wider market for renewable fuels; however, no one could have predicted the oil industry’s unwillingness and now their publicly-stated goal to eliminate the RFS.

**2. What are the benefits and risks of expanded use of E15 to automakers, other gasoline powered equipment makers, refiners, fuel retailers and others involved in the manufacture and sale of gasoline and gasoline-using equipment?**

E15 is the most tested fuel in history and moving up to E15 will add over 135,000 jobs in the United States. The Department of Energy, in conjunction with the U.S. Environmental Protection Agency, ran more than 6 million miles on 86 vehicles model year 2001 and newer to no ill effect. This testing led to the approval of Growth Energy’s waiver to allow for the sale of E15 in 2001 and newer passenger vehicles – roughly 80% of the vehicles on the road today. In fact, Ford and General Motors have already started labeling their vehicles as approved for E15 – General Motors for model years 2012 and 2013, Ford for model year 2013.

Auto makers have claimed that using E15 would void most warranties, but most vehicles covered under the E15 waiver are older than three years and are not covered by warranty. In addition, an automobile manufacturer would need to show that a warranty claim was caused by E15 use, and the extensive testing referenced above shows conclusively that E15 does not damage engines. Many other criticisms of E15 have been made with no scientific basis whatsoever.

E15 is a voluntary fuel choice to be made by consumers and retailers alike. Fuel retailers should not face any significant incremental risk for offering E15, assuming they follow the misfueling mitigation rules. In addition, the decision to offer E15 is voluntary based on a retailer’s assessment of return on invested capital, customer mix, and retail station configuration. Many retailers willingly accept the legal risks associated with selling alcoholic beverages and cigarettes because of the profitability of these products; the decision on whether to offer E15 is similar.

For small and marine engines, and any other gasoline engine other than a 2001 and newer passenger vehicle, the law explicitly prohibits E15. Further, the EPA has issued a specific rule to mitigate consumer misfueling, including a label specific to E15. Finally, there is no credible data to suggest

that fueling with E15 would damage these small engines. In addition, the volume of fuel consumed by marine engines is only a small part of the U.S. gasoline demand – 130,000 thousand barrels per day versus 8.46 million barrels per day in 2011 alone. It makes no sense to make policy decisions that could deny the majority of U.S. drivers’ access to cheaper, cleaner ethanol in order to accommodate a tiny fraction of fuel users.

Because ethanol consistently trades at lower prices than gasoline, increasing the blend provides both consumers and retailers with the cost-benefit advantage. Numerous studies show that ethanol already saves consumers between 17 cents and \$1.09 per gallon at the pump. Increasing the ethanol blend in gasoline will save consumers even more, and will give retailers offering E15 or higher level ethanol blends an edge in marketing to consumers, who largely base their fuel choice on price and performance. At a time of record gas prices, it only makes sense for refiners to comply with the law and allow sale of E15 and higher ethanol blends in the fuel marketplace as renewable fuels ensure competition in the marketplace.

**3. What are the risks of the introduction and sale of E15 to the owners of pre-2001 motor vehicles, boats, motorcycles, and other gasoline-powered equipment not approved to use it? Are there risks to owners of post-2001 vehicles? How do these risks compare to the benefits of the RFS?**

Again, E15 is the most tested fuel blend in history. While it is illegal to fuel pre-2001 motor vehicles, boats, and motorcycles, there is no credible evidence that E15 causes damage in these engines. When Growth Energy filed the original waiver for E15 with the U.S. EPA, we sought approval for all gasoline-powered engines and provided ample data to demonstrate the fuels’ safety and efficacy. The Department of Energy chose to narrow their specific testing by putting E15 on a path for approval for only 2001 and newer vehicles because finding vehicles with low enough mileage to run a lifetime of miles for testing was extremely difficult. We do not believe the risks to small engines are substantial, and certainly pale in comparison to the comprehensive benefits resulting from the Renewable Fuel Standard. The RFS has been one of the most successful, bipartisan energy policies over the last forty years. The RFS has helped the country move from nearly 60% dependence on foreign oil to 45%, saved consumers billions of dollars at the pump, created hundreds of thousands of American jobs, reduced government spending on farm programs, improved our environment, lowered greenhouse gas emissions, and reinvigorated rural communities across the country.

**4. What is the likely impact, if any, of the blend wall on retail gasoline prices?**

Ethanol trades at significantly lower prices than gasoline; breaking the blend wall by moving to higher ethanol blends will positively impact consumers by lowering their cost for gasoline. Fossil fuels are finite resources. The only alternative with significant volume is renewable ethanol. Without ethanol, gasoline prices will continue to rise and consumers would not get the benefit of a cleaner, less expensive fuel. A number of studies show consumers save between 17 cents and \$1.09 per gallon because of ethanol blended into gasoline.

**5. What is the timing of the implementation challenges related to the blend wall? Will some entities face difficulties earlier than others?**

Again, the RFS and the projected volumes have been law since 2007, and thus all entities involved in the fuel marketplace have been working to prepare to break the blend wall for several years. Those who continue to oppose the RFS and have not made wise business decisions to introduce lower-cost, domestic biofuels into their fuels will likely be impacted sooner than others. The implementation of higher biofuel blends could be rapid if those who control fuel distribution would move to accept these blends rather than to continue to erect needless hurdles to renewable fuels.

**6. Could the blend wall be delayed or prevented with increased use of E85 in flexible fuel vehicles? What are the impediments to increased E85 use? Are there policies that can overcome these impediments?**

With nearly eleven million Flex-Fuel vehicles on the road today, mid-level ethanol blends such as E30 can provide consumers with a less-expensive fuel choice than gasoline without suffering a significant mileage penalty and would immediately help relieve the pressure of the blend wall by helping to achieve the higher volumes of renewable fuel moving towards 2022. Additionally, with 72% of all light duty vehicles on the road today approved for use, moving to E15 would have a significant benefit on gasoline prices and securing our nation's energy independence.

Policies that continue to incentivize the production of Flex-Fuel vehicles and provide for the expansion of Flex-Fuel pumps and related infrastructure can help delay reaching the blend wall. If ethanol and other biofuels can be properly credited to reflect their true reduction of greenhouse gas emissions, it will continue to incentivize the market and development of flex-fuel vehicles, which in turn, will give consumers the ability to choose higher biofuel blends.

**7. Is E15 misfueling unavoidable? Are there lessons from the labeling and dispensing of diesel, E85 and other fuels that prevent their misfueling that can also be applied to E15? What specific actions are companies taking to address potential misfueling concerns under MMPs?**

E15 is only available for sale in a small number of retail facilities, yet the fuel is seemingly being held to an unrealistic standard regarding misfueling. EPA has imposed significant steps to mitigate misfueling, and we have worked extensively with retailers to educate them on the process of marketing and labeling E15 including using the proper label and submitting the proper misfueling mitigation plans.

Also, there are lessons to be applied to E15 from the introduction of ultra-low sulfur diesel into the marketplace. Ultra-low sulfur diesel (ULSD) was required for all 2007 and newer highway diesel vehicles and engines, while low-sulfur diesel (LSD) was expressly prohibited for 2007 and newer highway vehicles and engines. Since introduction there have been very few cases of misfueling. With both ULSD and E15, there certainly have been far fewer cases of misfueling than there have been with automobiles that require premium gasoline yet who continue fuel up with regular because of the significant expense at the pump.

Additionally, EPA required the ethanol industry to fund a survey of E15 in the marketplace, specifically to track and notify EPA of potential non-compliance in the marketplace. We have contracted with the RFG Survey Association to perform this survey and continue to work with the RFGSA to educate retailers on compliance. The ethanol industry has reached out to numerous stakeholders to establish a dialogue to avoid consumer misfueling, and continues to stay on top of this issue.

**8. Can blend wall implementation challenges be avoided without changes to the RFS? Is the existing EPA waiver process sufficient to address any concerns? If the RFS must be changed to avoid the blend wall, what should these changes entail? Should any changes include liability relief or additional consumer protections for addressing misfueling concerns?**

The RFS does not need to be altered to break the blend wall. EPA already has significant flexibility under the RFS program. Each year EPA reviews biofuel production and sets the annual standards via a public rulemaking process, thus giving stakeholders ample opportunity to comment and provide data ahead of finalized annual standards. Additionally, there are a number of policies outside of the RFS that can help to expand the market for higher blends of ethanol and other biofuels. Most notably, policies that continue to remove regulatory hurdles to the deployment of infrastructure and flex fuel vehicles for higher ethanol blends will remove the pressure on the blend wall by putting fuel choices in the hands of consumers based on price and performance rather than being stifled by the status quo of the current fuel distribution system. Also, the RFS already has an effective waiver process. Many critics believe that because a waiver has not been granted that the process is broken. It is clear in the law that harm must be shown; thus far, those who have sought a waiver have failed to show significant harm from the RFS. The RFS provides for a stable investment landscape; arbitrarily waiving the RFS without proving significant harm would greatly reduce investor confidence.

**9. Have the 2017 and Later Model Years Light Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy standards for cars and light trucks changed the implementation outlook of the RFS?**

The light duty GHG and CAFÉ rules, along with the downturn in the U.S. economy, have had a significant impact on fuel usage, which has thus impacted the amount of renewable fuel in the gasoline market. However, the rules continue to provide significant incentives to the automakers to build Flex-Fuel vehicles. These incentives are actually based on alternative fuel usage, so there is incentive both to vehicle manufacturers and to the fuel marketplace to get more renewable fuel into the system.

Additionally, in order to meet the new greenhouse gas emissions standards and corporate average fuel economy standards, many automakers are moving to smaller, higher compression engines that will depend on higher octane. Ethanol continues to be the cleanest, most inexpensive source of octane in the world as it replaces toxic aromatics in gasoline. Higher ethanol blends are the key to giving motorists higher octane fuels and improving air quality without a premium price.

**10. What other methods, including the use of drop-in fuels, are available to industry to ease the challenge posed by the blend wall?**

As discussed above, there are many ethanol blends above E15, including E30, that have shown decided benefits for emissions, vehicle performance, and lower fuel cost. Implementing additional regulatory flexibility, such as eliminating the unnecessary Reid Vapor Pressure (RVP) restrictions on E15, E30, and other mid-level ethanol blends (as their evaporative emissions profiles are better than conventional E10 gasoline), will provide consumers a choice at the pump and would relieve the pressure of the blend wall.

Specifically, clearing regulatory hurdles for these higher blends and for the expansion of Flex-Fuel pumps will not only help relieve the pressure of the blend wall, but most importantly will give consumers a true choice of fuels at the pump. Consumers can then make an informed decision based on price and performance, and pick the fuel that is best for both their wallet and their vehicle.

**11. What are the impacts of renewable fuel producers if the RFS is changed to avoid the blend wall?**

The RFS provides consumers market access to higher ethanol blends. Without the RFS, vested interests who have no interest in moving beyond the status quo of foreign oil dependence will continue to control the fuel distribution system and consumers will never have the ability to choose which fuel is best for their vehicle based on price and performance. In the fall of 2012, Growth Energy put together significant comments to the EPA in response to requests to waive the RFS from various state governors. In those comments, we demonstrated that waiving the RFS would jeopardize farmers, rural jobs and economies and would increase consumers' prices at the pump. Specifically, we estimated that waiving the RFS could result in up to \$7.8 billion in lost revenue and 8300 jobs lost in ethanol producing areas. Additionally, waiving the RFS would result in a \$7.5 billion a year cost to consumers in the way of higher fuel costs and between \$5.8 and \$27 billion loss to American farmers. Finally, companies and facilities have already spent billions of dollars building facilities, harvesting cellulosic materials and planning on the certainty of a fifteen year RFS program as they move to the next generation of biofuels. Altering the RFS now would immediately freeze investment and would stifle the opportunity to develop these biofuels after only five years. Businesses and investors need to have certainty.

We have attached a copy of our RFS waiver comments accordingly.



April 5, 2013

Honorable Fred Upton, Chairman  
Honorable Henry Waxman, Ranking Minority Member  
Committee on Energy and Commerce  
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Dear Chairman Upton and Ranking Member Waxman:

Thank you for the opportunity to comment on the Renewable Fuel Standard (RFS) and the impending blend wall. As you know, the RFS is a complex issue, and Honda appreciates its goals to displace petroleum use and create a market for domestically produced fuel. Many of the issues raised by the blend wall are the result of two unforeseen circumstances: first, the reduced consumption of petroleum in the United States; and second, the slow pace in the evolution of advanced biofuels, including drop-in fuels.

The RFS requires increasing amounts of biofuels to be blended into gasoline through 2022, based on the assumption at the time of enactment that gasoline demand would continue to rise throughout the duration of the program. Since the RFS was last revised in 2007, however, gasoline consumption has actually dropped, due largely to increased vehicle fuel efficiency. This trend is projected to continue as the 2017-2025 vehicle greenhouse gas and Corporate Average Fuel Economy (CAFE) requirements are implemented. By 2025, a gallon of gas will power a vehicle nearly twice the distance it can go today. To consume the required 36 billion gallons of biofuels in 2022, it is currently estimated that concentration levels will have to rise to more than 30%, or E-30.

The RFS also anticipated the development of cellulosic and other advanced biofuels over the decade and a half life of the RFS. While progress is being made, the economic viability of these alternatives to corn-based ethanol has yet to be proven in large scale. Significantly, mid-level blends of ethanol require an alternative infrastructure and are not compatible with many legacy products. Advanced drop-in biofuels would obviate many of the problems manufacturers and consumers are currently facing with mid-level ethanol blends.

Many of the problems we face with E-15 are the result of the so-called "partial waiver" the Environmental Protection Agency granted with respect to E-15. For the first time, EPA has allowed in the market a fuel that is not approved for use in all engines without adopting meaningful countermeasures to prevent misfueling. Engine manufacturers universally agree that EPA acted outside the authority granted to it under the Clean Air Act in granting this partial waiver.

We have answered the questions we viewed as applicable to Honda: numbers 2, 3, 6, 7, 8, 9, and 10. We look forward to working with you to ensure the continued success and viability of the RFS.

Sincerely,



Edward B. Cohen  
Vice President  
Government & Industry Relations

## **Responses of Honda North America**

**2. What are the benefits and risks of expanded use of E-15 to automakers, other gasoline powered equipment makers, refiners, fuel retailers, and others involved in the manufacture and sale of gasoline and gasoline-using equipment?**

### **Risks to automakers**

Honda is the largest manufacturer of internal combustion engines in the world. Honda engines can be found not only in our passenger cars and light duty trucks, but also in motorcycles, all terrain vehicles, outboard marine engines, generators, lawn equipment and an array of other small engine products. Each engine that we build was designed to operate on the prevailing fuel in the market (E-10) and certified as required by EPA. The introduction of E-15 that might be readily available to the legacy fleet of vehicles and products—without effective misfueling countermeasures—creates the risk that consumers will experience product failures. Regardless of fault, those customers will assume a deficiency in their product and look to the manufacturer for redress.

### **Risks to other gasoline powered equipment makers**

Honda sells hundreds of thousands of small engines to manufacturers of power equipment products. The EPA has not approved the use of E-15 in any of those small engines. Nonetheless, there is a high likelihood of misfueling, creating customer relations problems between the ultimate consumer and the manufacturer of the product and, potentially between Honda and its manufacturer customer.

**3. What are the risks of the introduction and sale of E-15 to the owners of pre-2001 motor vehicles, boats, motorcycles, and other gasoline-powered equipment not approved to use it? Are there risks to owners of post-2001 vehicles? How do these risks compare to the benefits of the RFS?**

### **Risks to vehicle owners**

The major risk to owners of pre-2001 motor vehicles is the possibility of misfueling based on unclear or insufficient labeling at the pump and the lack of other effective countermeasures. The switch from leaded to unleaded gasoline in the 1970s demonstrated that even when stringent misfueling mitigation plans are implemented, misfueling still occurs. (Further discussion on misfueling mitigation is discussed as an answer to Question 7.) As E-15 becomes more widely adopted, owners of pre-2001 motor vehicles may also face difficulties finding fuel stations that sell low-level ethanol blends (E-10 or lower). EPA has not guaranteed the continued availability of “legacy” fuel for these customers.

While EPA correctly recognized that pre-2001 vehicles should not be fueled with E-15, Honda believes that owners of post-2001 vehicles are also at risk, based on studies conducted by the Coordinating Research Council (CRC). The CRC has been investigating vehicle-fuel interactions for decades. Multiple CRC projects involving mid-level ethanol blends were in progress when the EPA decided to grant the waivers for E-15. The waivers were granted on the basis of a single catalyst durability program conducted by EPA. That is, EPA examined the impact of E-15 on the catalyst but not on any other system of the vehicle, all of which could degrade the emissions control system. Unfortunately, EPA made its decision without the benefit of the work of the CRC. This was despite the fact that EPA (along with the DOE and ethanol trade associations) was being frequently informed of the progress of the CRC projects.

Results of the CRC programs are now becoming available<sup>1</sup>, and are revealing serious issues related to mid-level ethanol blends. In an engine durability project, two out of eight engines failed when running on E-15. Both were from popular post-2001 vehicles. In another study, fuel system component failures occurred with mid-level ethanol blends.

A study focused on vehicle on-board diagnostics (OBD-II systems) revealed that the use of mid-level blends will illuminate the check-engine light in some vehicles because the system can misinterpret the extra oxygen in the fuel as an engine hardware failure.<sup>2</sup> A recent study by the Oak Ridge National Laboratory reached a similar conclusion.<sup>3</sup> At a minimum, these incidents are a nuisance to our customers, requiring a trip to have the vehicle serviced to ensure proper vehicle operation. Even after being reset, false positives will continue to occur as long as the fuel continues to be used. One can envision customers becoming numb to a continued positive indicator response, fundamentally undermining the purpose of the indicator and possibly leading to customer dismissal of warnings triggered by serious issues.

### **Risks to small engine owners**

Although the use of E-15 for small engines, marine outboard engines and power products is not approved by EPA, there is concern that consumers may inadvertently or intentionally use this fuel, which may affect the product performance and durability. Unlike fuel injected engines, carbureted engines can only accommodate a 10 percent range of ethanol concentration. Honda small engine products are designed and certified to operate on E-10 or lower ethanol concentrations. Like owners of pre-2001 motor vehicles, the continued availability of low-level ethanol blends is a concern for these customers.

Since Honda small engines are built to operate on gasoline blends up to E-10, using fuel with higher ethanol concentrations may cause starting or performance problems, especially in cold weather. Additionally, in some manufacturers' products, the increased level of ethanol in the fuel may dissolve metal, rubber, and plastic fuel system components due to material incompatibility. The dissolved material can clog filters or pass through and leave deposits on carburetor jets, intake tracts, valves, and valve guides. This is a concern for small engine powered products, such as lawnmowers, generators, and pressure washers. Also, particular concern exists for marine outboard engines since in-hull fiberglass fuel tanks are constructed with polyester resin which may not be compatible with ethanol blends.

Mid-level ethanol blends like E-15 also exacerbate storage issues in small engine products. Gasoline is an organic compound and begins to deteriorate in less than 30 days once exposed to oxygen and sunlight. The gasoline deterioration rate accelerates if proper fuel storage recommendations are not followed. Since most carburetors are vented to the atmosphere, the risk of stale fuel is ongoing, which results in gum and varnish deposits forming in the fuel system. Ethanol further complicates the chemistry of gasoline since it absorbs moisture from the surrounding air. If excessive moisture is absorbed, the ethanol and water will phase separately (fall out of suspension) from the gasoline blend. The engine will not operate properly on this ethanol/water composition which will cause hard starting

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<sup>1</sup> <http://www.crcao.org/news/Mid%20Level%20Ethanol%20program/index.html>

<sup>2</sup> This process is also known as ethanol-induced enrichment.

<sup>3</sup> <http://sae.fuel.saejournals.org/cgi/content/abstract/5/3/1360>

and rough running. It can also contribute to internal rusting and damage to fuel lines, gaskets, valve seats and vital carburetor components.

6. Could the blend wall be delayed or prevented with increased use of E-85 in flexible fuel vehicles? What are the impediments to increased E-85 use? Are there policies that can overcome these impediments?

Honda does not believe that increased use of E-85 in flexible fuel vehicles (FFVs) is a realistic solution to the impending blend wall. Although there are roughly 9 million FFVs on the road today, consumers have been reluctant to embrace E-85 because of the many trade-offs inherent in the fuel. First, E-85 has approximately 30% lower energy content<sup>4</sup> than regular gasoline, resulting in proportionately reduced fuel economy. Second, the price difference between E-85 and E-10 would have to be significant to offset the reduced fuel economy and increased inconvenience. Finally, limited E-85 infrastructure makes refueling impossible in some parts of the country.

7. Is E-15 misfueling unavoidable? Are there lessons from the labeling and dispensing of diesel, E-85 and other fuels that prevent their misfueling that can also be applied to E-15? What specific actions are companies taking to address potential misfueling concerns under MMPs?

Honda does not consider the current E-15 Misfueling Mitigation Plan (MMP) sufficient to avoid misfueling in pre-2001 vehicles or small engine products. The 1974 introduction of unleaded gasoline provides an instructive example on the difficulty of preventing misfueling. Lead was removed from gasoline to enhance public health. Lead also caused damage to the new generation of catalysts being introduced to meet more aggressive emissions standards. To address the concern of spoiled catalysts due to misfueling, EPA mandated that the dispenser on unleaded gasoline dispensers and the gas tank receptors be made smaller. The leaded gasoline nozzle was too big to fit in the gas tank of newer vehicles. Nonetheless, because leaded gasoline was a few cents less expensive than the new unleaded fuel, it was found that 13% of motorists continued to misfuel.

To have any hope to prevent accidental or advertent misfueling, a more aggressive program is needed. First, we must emulate our experience with the transition to unleaded gasoline by finding ways to prevent misfueling. One possibility is the use of radio-frequency identification, or RF, chips. In this scenario, the pump would not dispense E-15 unless there is a matching RF chip in the vehicle, indicating that it was safe to use. While this system is not foolproof (for example, filling a vehicle approved for E-15 and subsequently filling a gasoline can for lawnmower use without resetting the pump), it nonetheless would reduce anticipated misfueling episodes.

A comprehensive MMP would also require maintaining the availability of E-10 for the foreseeable future. Vehicles have an average life of 15 years or more; small engine products frequently last much longer. There is also need for a robust consumer education campaign to inform the public about the risks of using E-15 in pre-2001 vehicles and in small engine products.

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<sup>4</sup> <http://www.eia.gov/tools/faqs/faq.cfm?id=27&t=4>

8. Can blend wall implementation challenges be avoided without changes to the RFS? Is the existing EPA waiver process sufficient to address any concerns? If the RFS must be changed to avoid the blend wall, what should these changes entail? Should any changes include liability relief or additional consumer protections for addressing misfueling concerns?

Liability relief for ethanol producers, fuel blenders, retailers and even manufacturers is a troubling concept. This would leave responsibility for damage caused by E-15 to the consumer, who, with the exception of intentional misfueling, is an entirely innocent party. The objective should be to avoid damaging fuels in the market. If fuels that damage some products are authorized by EPA, it is incumbent upon the EPA and those who produce, distribute and sell the fuels to take meaningful and effective countermeasures to prevent damage.

9. Have the 2017 and Later Model Years Light Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy standards for cars and light trucks changed the implementation outlook of the RFS?

Yes. A consumer purchasing a new vehicle in 2025 will enjoy nearly double the fuel economy than a consumer driving a 2012 model does today. Falling demand for gasoline will require raising the concentration levels of biofuels necessary to meet RFS requirements. It is estimated that the blend level will need to exceed 30% to achieve the 36 billion gallon RFS requirement in 2022 absent the availability of non-ethanol products.

By the same token, the lower energy content of mid-level ethanol blends complicates the implementation of the CAFE standards. If the certification fuel changes, automakers could (presumably) use a correction factor for the purpose of calculating CAFE. However, the use of a correction factor would further exacerbate the difference between the miles-per-gallon estimate on fuel economy stickers versus what the consumer can expect to achieve in real-world driving scenarios. Without education efforts, this could present a significant consumer acceptance problem.

10. What other methods, including the use of drop-in fuels, are available to industry to ease the challenge posed by the blend wall?

Drop-in fuels would allow the RFS to remain viable without increasing the amount of ethanol in our fuel supply. As such, Honda supports the use of economic incentives to advance the development of drop-in fuels until they are price competitive. For example, the Renewable Identification Number (RIN) system could be modified to incorporate a higher multiplier credit that promotes the use of drop-in fuels like biobutanol.

Another path forward would be to allow other advanced technologies—like hybrid, battery-electric, natural gas, and fuel cells—to qualify as a renewable fuel under the RFS. Indeed, the newly discovered U.S. reserves of natural gas can be used as the basis for multiple transportation fuels: direct use in natural gas vehicles, hydrogen for fuel cell vehicles after reforming, and electricity generation for battery-electric vehicles. If the central goal of the RFS is to reduce our dependence on foreign oil, then any technology that accomplishes that aim should be rewarded. This change would also make the RFS complementary to, instead of at odds with, the Corporate Average Fuel Economy standards.



April 5, 2013

The Honorable Fred Upton  
Chairman  
Committee on Energy and Commerce  
2125 Rayburn House Office Building  
Washington, DC 20515

The Honorable Henry Waxman  
Ranking Member  
Committee on Energy and Commerce  
2322A Rayburn House Office Building  
Washington, DC 20515

Dear Congressman Upton and Congressman Waxman,

Thank you for the opportunity to provide comments in response to questions regarding the implementation of the Energy Independence and Security Act and the Renewable Fuels Standard, specific to the blend wall and fuel compatibility issues<sup>1</sup>. These discussions will play a role in ensuring that the goals of the Energy Independence and Security Act as envisioned by Congress in 2007 will be met. The defined goals of the Renewable Fuel Standard passed by Congress in December of 2007 are to 1) move the country to greater energy independence and security, 2) increase the production of clean renewable fuels, 3) protect the consumers, and 4) reduce greenhouse gas emissions.

#### *GREATER ENERGY INDEPENDENCE AND GREATER SECURITY*

By any evaluation of the above goals, the Renewable Fuel Standard has been a resounding success. The number one stated goal in the RFS2 legislation was to reduce our dependence on imported oil to make our country more energy independent and more secure. According to the U.S. Energy Information Administration (EIA), our oil imports have decreased from 60 percent of our total usage to 45 percent. As recently cited by John Miller (an energy consultant and blogger in [theenergycollective.com](http://theenergycollective.com)), “The largest sources of transportation sector reduced gasoline consumption from 2008 to 2012 was due to improved fuel efficiency of new vehicles and increased biofuels. Increased ethanol biofuels accounted for about 45 percent of the total reduced transportation petroleum gasoline consumption 2008-2012.”

Energy security is not only about reducing foreign oil imports, but also about providing a buffer to supply and price disruptions such as natural disasters, economic and/or political upheavals, accidents or man-made events such as strikes or embargoes. Due to economies of scale and location of pipelines and port terminals, U.S. refineries are large and located in areas with a concentration of industrial facilities. In contrast, the location and size of the approximately 200

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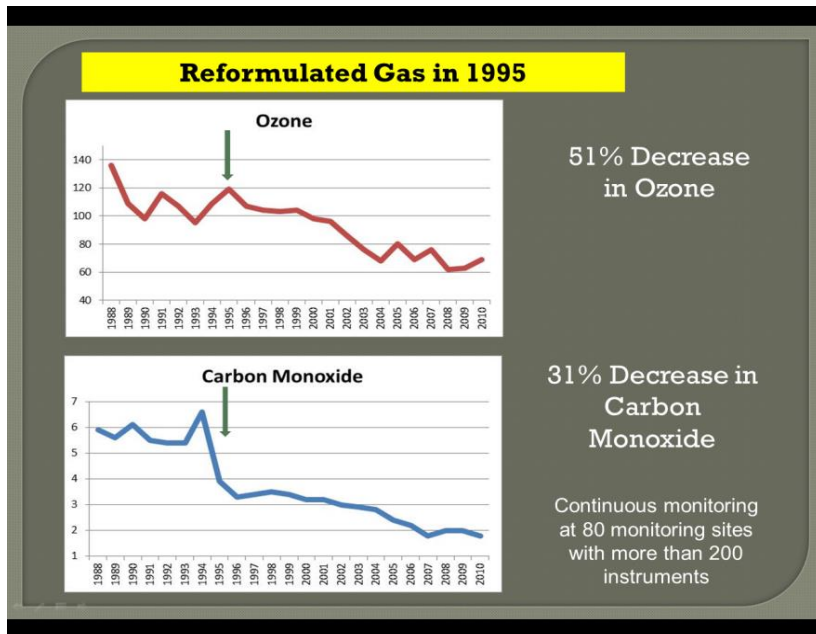
<sup>1</sup> RENEWABLE FUEL STANDARD ASSESSMENT WHITE PAPER: Blend Wall/Fuel Compatibility Issues, <http://energycommerce.house.gov/sites/republicans.energycommerce.house.gov/files/analysis/20130320RFSWhitePaper1.pdf>



ethanol plants are geographically dispersed based on feedstock availability and transportation systems, which provides a buffer to potential gasoline supply disruptions. In Illinois alone, there are 15 plants with an annual production capacity over 1.6 billion gallons of ethanol. This is equivalent to over 30 percent of the gasoline consumed in Illinois. Except for the limitations of the blend wall, the ethanol capacity in Illinois can provide an excellent buffer for the Midwest to any supply disruptions of oil and gasoline from the Gulf or shut downs by any of the six or seven refineries serving Illinois. It is critically important for our energy and economic security to not lose this diversity and flexibility in our domestic fuel supplies.

### **IMPROVING THE ENVIRONMENT**

Ethanol has been a great success story when it comes to reducing vehicle emissions under the Clean Air Act Amendment. In 2005, ethanol took the place of MTBE as the oxygenate of choice to reduce ozone, CO<sub>2</sub> emissions, and other criteria pollutants in our transportation sector. In fact, the huge demand for ethanol to substitute for MTBE by the petroleum industry and marketers expanded ethanol production capacity from 3.9 billion gallons in 2005 to 9 billion gallons in 2008. This investment in ethanol capacity helped the industry to fully achieve the requirements of the RFS II.



The city of Chicago, which participates in the reformulated gasoline program because of its ozone non-attainment status, has moved from moderate non-attainment for ozone to marginal as of June 2012 and would have reached attainment except for one out of the 80 reporting stations measuring higher ozone levels than the standard. This improvement in air quality is due in part to Chicago motorists using 10 percent blends of ethanol and will improve further as we move to higher blend levels.

It is critical for the consumers in Illinois and the residents of all of the non-attainment areas that there is no backsliding in our emissions reductions program through the Clean Air Act Amendment and reinforced through the passage of RFS2 legislation.

The Energy Independence and Security Act was landmark legislation because it included the reduction of greenhouse gas emissions as part of the requirements in the Act.

According to a recent report issued by the Global Renewable Fuels Association, ethanol production and use is estimated to reduce greenhouse gas emissions by 100 million metric tons in 2012, which is equivalent to removing 20.2 million light duty vehicles from the highways.

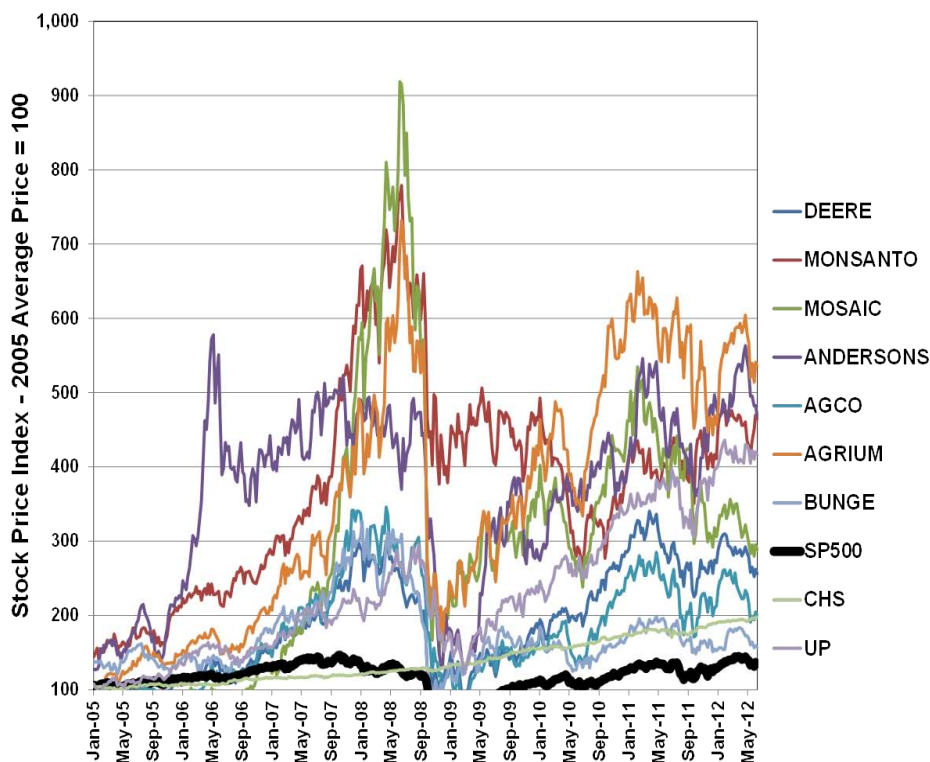
### **STRENGTHENING RURAL ECONOMIES**

One of the major reasons Congress enacted the RFS II was to strengthen rural economies in the U.S. through the development and growth of a renewable biofuels industry. A recent study conducted by the Illinois Institute for Rural Affairs at Western Illinois University found that the ethanol plants in Illinois generate \$5.3 billion in total economic output. While the total economic impact of the corn used by the Illinois ethanol industry resulted in a separate impact of \$7.18 billion. The total jobs created in Illinois alone are over 54,000. The Illinois ethanol industry produced more than 1.6 billion gallons of ethanol in 2011, purchased 670 million bushels of corn and sold 6.25 million tons of animal feed products.

The direct economic benefits from these ethanol plants in the form of local tax revenues, payroll, jobs and local purchases are obvious.

There are additional economic benefits accruing from ethanol production in the form of new seed technologies, expanded grain storage facilities, truck purchases, and investment in farming equipment and land, by family farmers. This growth has contributed to the agriculture sector outpacing most other sectors of the U.S. economy in the years between 2008 and 2012.

### **Stock Price Performance of Select Agricultural Companies and the S&P 500**



Congress must carefully weigh what impact any changes to the RFS would have on the economic impact of agriculture and related industries. The U.S. economy and consumers can ill afford a downturn in this sector.

In summary, the corn to ethanol industry within the RFS is a *renewable* resource, has reduced our imports of foreign oil, reduced our consumption of gasoline, increased our energy security, reduced

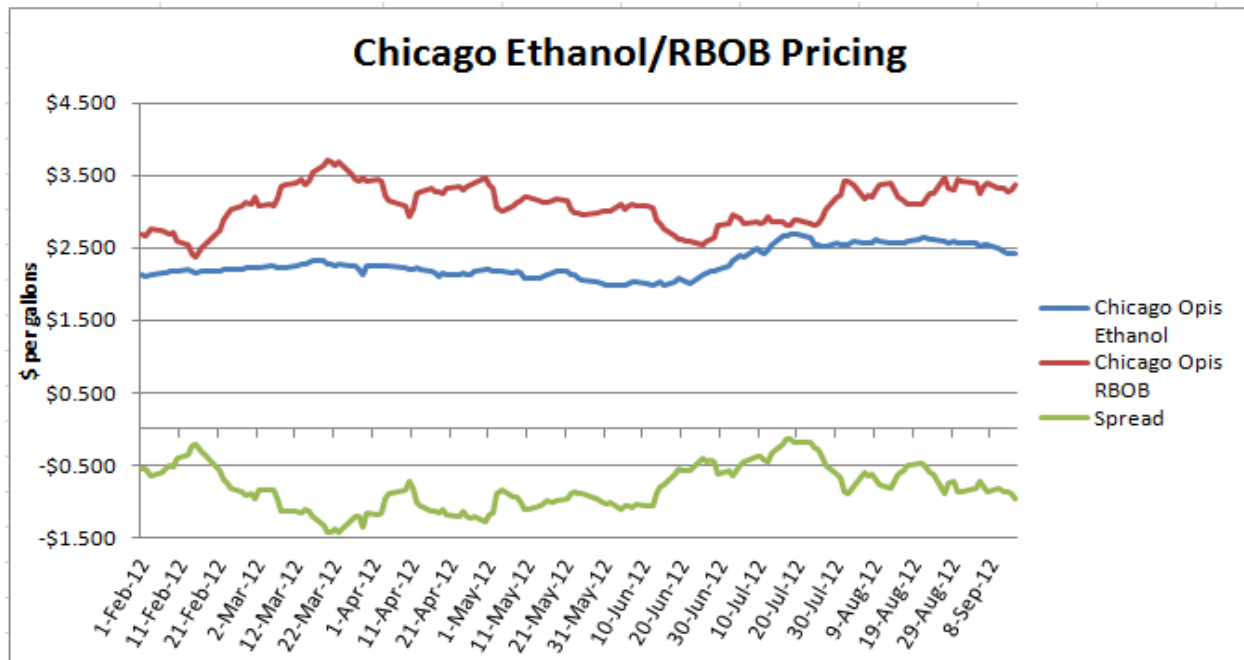
		3-Jan-05	25-Jun-12	percent change
John Deere	DE	\$37.20	\$75.53	103.04%
New Holland/ Case IH	CNH	\$19.37	\$37.53	93.75%
Monsanto	MON	\$27.78	\$78.45	182.40%
Mosaic	MOS	\$16.32	\$50.58	209.93%
S&P 500		1,181	1,313	11.18%

criteria pollutants in the transportation sector, significantly reduced CO<sub>2</sub> emissions, and grew our rural economies during a worldwide recession. Additionally, corn-based ethanol, through the RFS, accomplished the above at a

price per gallon significantly less than gasoline.

### PRICE SAVINGS FOR CONSUMERS

This year the price per gallon of ethanol has ranged between 40 cents and one dollar per gallon less than gasoline, prior to blending. This is a huge potential savings for the consumer at the pump if the savings were passed on to the consumer. Unfortunately since the market is saturated with 10 percent ethanol, there is no incentive for these savings to be passed on until more E-85 or E-15 fuels are available to the public.



Congress must carefully consider the benefits that the consumers realize each time they fill up their tanks from the reduced price of ethanol compared to gasoline. In addition to the value of volume substitution, the value of the properties of ethanol to the refiners must be taken into account. While the value of the octane in ethanol is not reflected in the rack price of ethanol, this value would be recognized through huge price hikes at the pump if the refiners did not have

access to ethanol as an economical octane enhancer. Several studies referenced within, estimate that ethanol reduces the price of gasoline from 17 cents to 89 cents for the consumer at the pump, which translates into at least \$24 billion in annual savings for the consumer. Given the impact that high gasoline prices have had on consumer discretionary income and our overall economy since 2008, any change in national energy policy that could send these prices higher must be carefully weighed.

### Stakeholder Comments

(in response to the questions attached to the white paper)

The first question in this white paper relates to what extent the blend wall was anticipated. When the Energy Independence and Security Act was passed by Congress December 2007, the oil industry, ethanol industry, agriculture, environmental groups and USEPA all recognize that to achieve the goals of the RFS2, the 10 percent blend wall would have to be overcome.

On Friday March 26, 2010 USEPA stated in the Federal Register (Vol. 75, No. 58 on page 14759) that *"In 2009, EIA projects that gasoline demand will peak around 2013 and then start to taper off due to vehicle fuel economy improvements. Based on the primary ethanol growth scenario we're forecasting under today's RFS2 program, the nation is expected to hit the 14-15 billion gallon blend wall by around 2014 although it could be sooner if gasoline demand is lower than expected."*

The blend wall did happen sooner than was anticipated due to the economic downturn that began in 2008 and continues through today. However, the blend wall should not be a deterrent from meeting the RFS2 goals since approximately 70 percent of the gasoline vehicles on the road today can use E-15 based on the recent rules approved by USEPA. The blend wall only serves as a deterrent when oil companies and petroleum marketers elect not to give their customers a choice to purchase E-15 or unleaded fuel with even higher blends of ethanol.

USEPA published rules October 10, 2010 and in January and June of 2011 regarding the approval for the use of E-15 in 2001 and newer vehicles. The rules specifically prohibit E-15 fuel from being used in other engines including small engines, outdoor equipment, boat engines, etc. Retailers selling E-15 fuel according to USEPA are required to display a warning label on the pump and must comply with a misfueling mitigation program. By comparison, there are fewer controls regarding the misfueling of diesel fuel in a gasoline vehicle or vice versa than in protecting engines and vehicles from E-15 fueling mistakes. USEPA incorporated many different consumer and engine safeguards in these final rules, probably more so than for any other fuel approved by USEPA previously. In testing E-15 in vehicles to ensure compatibility, emissions reductions, durability and safety, USDOE spent more than \$40 million to ensure that the consumer is protected. The greatest benefit of E-15 for the nation is that it will immediately lower gasoline prices at the pump and reduce our dependence on foreign oil.

Measuring the impact of the blend wall on retail gasoline prices poses an interesting question that requires more than superficial treatment. The short answer is, first, the blend wall will have

an unfavorable impact on gasoline prices only as long as oil companies refuse to offer E-15 to their consumers. By keeping the RFS intact, oil companies and petroleum marketers will have the incentive to “tear down that wall” by offering and promoting E-15 so that consumer can, in accordance with their preferences, enjoy the benefits of a high performing, lower cost renewable fuel alternative.

When the blend wall is removed, consumers will benefit from the three pillars of E-15 value: its lower cost per gallon (equal to about \$0.04 per gallon of finished E-15 gasoline at today’s prices), the lower cost of producing fossil gasoline blend stocks that are enabled by ethanol’s high octane (which historically has been as low as \$0.01 per gallon of finished E-15 gasoline and as high as \$0.06 per gallon of finished E-15 gasoline), and the lower refining margins brought about by the loosening of the refining supply/demand balance (which, from various studies estimating the benefits of E-10, could be inferred to be as high as \$0.45 per gallon of finished E-15 gasoline).

The second part of the answer is that even the cost of buying RINs in lieu of blending E-15 will be a minor, insignificant cost to the consumer. Keep in mind that only the marginal RIN must be purchased, not *all* the RINs an obligated party (blender) needs because that obligated party gets 0.1 RINs for free each time it blends 0.1 gallons of ethanol into 0.9 gallons of fossil gasoline blend stock in the daily production of E-10. In 2013, all those free RINs will add up to approximately 13 billion RINs leaving at most 1.6 billion remaining to buy (assuming 130 billion gallons of gasoline consumption, no banked RIN usage, all Advanced Biofuel except for the biodiesel carve-out is ethanol, and no borrowing of RINs from 2014). Simple math shows that, even at a high RIN prices of \$0.75, 1.6 billion RINs cost only \$1.2 billion, which comes to only \$0.009 per gallon of finished gasoline across the huge 130 billion gallon market. Again, given all of those factors, the impact of purchasing marginal RINs adds just under *a penny per gallon*.

To summarize, the artificially-imposed blend wall may cost consumers each time they fill up today but the RFS, if left intact and permitted to work, will tear down the blend wall and encourage oil companies to give consumers the choice to save orders of magnitude more tomorrow.

The ethanol industry has already crashed into the blend wall. With the arbitrary barriers and tariffs imposed on US ethanol shipped to Europe and the opposition by the oil industry to an open market for E-15, the margins are very low with several plants possibly shutting down this summer. This is not in the best interest of consumers or the country.

In regards to Question 6, the negative impact that the “blend wall” has on achieving all of the goals of the RFS2 and the negative economic impact that the “blend wall” creates for the consumer at the pump by not allowing increased blends of cheaper ethanol could be partially averted by increased E85 use.

A major inconsistency between the proposed CAFE/GHG rule and the RFS2 regulation is that the production of Flex Fuel Vehicles (FFVs) is discouraged by the proposed rule which could result in discontinuing FFV production after 2015. The recently issued EPA draft guidance letter

on an E85 FFV weighting factor<sup>2</sup> does not improve the situation since neither the weighting factor nor the fuel usage factor proposed by EPA serves as a sufficient incentive to encourage auto manufacturers to produce FFVs at a rate of at least 50 percent of annual production beyond 2015.

EISA extended fuel economy incentives for FFVs through 2020 because Congress wanted to encourage the continued production of vehicles that could use higher volume blends of ethanol up to E85. However, beyond 2015, EPA requires that the incentive be pro-rated based on use of the alternative fuel (E85 or ethanol blend greater than E15). This will be a disincentive for automobile companies to produce more FFV vehicles just when they are really needed.

Congressman John Shimkus identified early on the inconsistencies and conflicts between the rules developed by USEPA regarding the CAFÉ/GHG rule and the goals of the Energy Independence and Security Act. Congressman Shimkus expressed concern at a hearing in May 2011 that EPA chose to effectively eliminate FFV incentives after 2015 in the Supplemental Notice of Intent for the 2017 to 2025 CAFE/GHG rule.<sup>3</sup>



The purpose of the FFV incentives, sometimes referred to as CAFE credits created by the Alternative Motor Fuels Act of 1988 was to insure that an adequate number of FFVs were available in the fleet that could use E85 when it became available. This would help ensure that the RFS2 targets are met. Although the proposed CAFE/GHG rule provides many credits for electric vehicles, it significantly reduces the credits for FFV vehicles. The continuation of FFV incentives can be justified in order to consume the required RFS2 volumes of renewable fuels, and to be consistent with EISA's intent. We are just now seeing the pricing incentives begin to work. Notice the price differential between E-10 and E-85 at the station pictured.

The RFS2 allows for many different renewable fuel options to be part of the future fuel mix accomplishing the goals originally established in the EISA. Without

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<sup>2</sup> Draft Guidance Letter CD-13-XX (LD), "E85 Flexible Fuel Vehicle Weighting Factor for Model year 2016-2019 Vehicles."

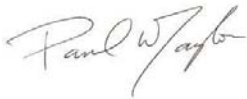
<sup>3</sup> Congress did not add a fuel use requirement as a condition of extending FFV credits in EISA, and such a requirement appears to be inconsistent with Congress' intent. The following quotes are taken from comments by Congressman John Shimkus at a U.S. House of Representatives, Subcommittee on Energy and Power hearing on May 11, 2011 entitled, "The American Energy Initiative". Congressman Shimkus' comments are documented in an EPA response letter to Congress dated June 22, 2011. Congressman Shimkus: "Please provide this Subcommittee with a list of areas in the EPA/NHTSA joint rulemaking of May 7, 2010 where EPA's rules are contrary to the program designed by Congress in EPCA as amended by EISA, and why EPA chose to substitute its judgment over the clear, specific policy preferences passed by Congress." "How can this rule be characterized as 'harmonized and consistent' if the way EPA treats FFV vehicles is markedly different than the way Congress mandated FFV credits be treated under CAFE?."



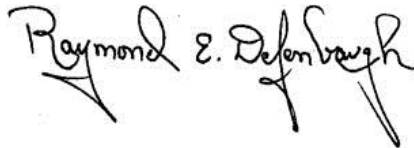
consistent and long term energy policy these other fuels such as “drop-ins” will not be developed. Congress needs to expand beyond a two year view of energy policy that is being driven by oil’s immediate concern for market share. Based on their recent profits, the oil industry is hard pressed to prove harm in any significant way.

Finally, stepping back should not be an option. The blend wall is now reality as a result of oil industry’s strategy trying to protect its market share. Allowing the RFS to remain in place and by permitting market forces to work, consumers will see reduced prices at the pump, our transportation fuel supply will be more secure, the rural economy will remain strong and emissions will be reduced.

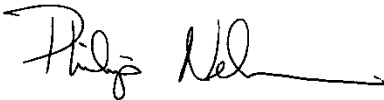
Sincerely,



Paul Taylor, President  
Illinois Corn Growers Assn



Raymond Defenbaugh, President  
Illinois Renewable Fuels Assn



Philip Nelson, President  
Illinois Farm Bureau

## **Institute for Energy Research's<sup>1</sup> Comments on *Renewable Fuel Standard Assessment White Paper***

Thank you for the opportunity to provide comments on the Renewable Fuel Standard (RFS) white paper. The RFS is a critical issue for all Americans because the RFS increases the price at the pump and higher energy prices impede economic growth. We believe that affordable, reliable energy is one important key to reviving the economy and we are grateful the Energy and Commerce Committee is examining this important issue.

### **1. To what extent was the blend wall anticipated in the debate over the Energy Policy Act of 2005 and the Energy Independence and Security Act of 2007?**

The blend wall was not anticipated by EPACT 2005 or EISA 2007. As the White Paper correctly notes, fuel demand is currently 10 percent below the demand projected at the time. Congress, the Administration, and energy experts did not foresee the drop in fuel consumption, nor did they foresee the increase in domestic oil production.

This failure to anticipate the blend wall is a cautionary tale to illustrate why Congress should be wary about mandates. The best experts did not foresee the future with 100 percent accuracy and Congress cannot either. Congress' actions will hopefully be tempered by this experience.

The problem with the blend wall is just one flaw in the RFS. The RFS was based on flawed premises—a belief that the United States was running out of oil and the belief that ethanol was a new and novel fuel that could become cost-effective with a little push from the federal government.

First, the United States has always been energy rich, but has lacked access to much of our vast energy resources. The federal government has established policies which leave unleased 97 percent of our federal lands and waters for energy production, but private industry figured out how to combine hydraulic fracturing and directional drilling in a cost-effective manner and create the shale oil and gas revolution on the state and private lands the federal government's policies could not affect. This revolution has unlocked huge amounts of oil and natural gas resources that were previously unavailable and now the United States is on pace to soon become the world's largest oil producer.

This was not at all foreseen when the RFS was created, although the Committee should be commended for its vital role in properly recognizing that states rather than the federal government more properly regulate hydraulic fracturing in Section 322 of EPACT 2005(PL 109-58). The energy revolution sweeping the world—and the only bright spot in our nation’s moribund economy—owes much to the committee’s hard work on this provision.

The second incorrect assumption was that the biofuel industry was new or novel. Ethanol is not a new fuel, but a very old one. The first time we know that ethanol was used in an internal combustion engine was in 1826—187 years ago. Henry Ford’s first car ran on pure ethanol and in the 1920, Ford proclaimed that ethanol was the fuel of the future.<sup>2</sup>

In the mid-2000s, ethanol, and biofuel generally, didn’t need a new government program in the form of the RFS, instead they needed to become cost-effective. Billions of dollars in subsidies and forcing people to use it whether they want to or not haven’t changed what the market knew about ethanol in the early 1900s—ethanol may have a role, but it is only two-thirds as efficient and effective at powering cars and trucks as an equivalent amount of gasoline.

## **2. What are the benefits and risks of expanded use of E-15 to automakers, other gasoline powered equipment makers, refiners, fuel retailers, and others involved in the manufacture and sale of gasoline and gasoline-using equipment?**

There are no benefits of expanded E-15 use. E-15 use is beneficial to ethanol and corn producers, but otherwise E-15 harmful. For late model year vehicles, E-15 may not harm the engines but E-15 is nevertheless a negative. E-15 has lower energy content than E10 or gasoline and as a result, it harms fuel economy, an unintended consequence that runs counter to other federal laws designed to increase vehicle mileage. The fuel economy hit would not necessarily be a problem if ethanol reduced fuel prices, but currently on an energy-adjusted basis, E85 costs \$4.20 a gallon compared to \$3.62 for regular gasoline.<sup>3</sup>

However, a loss of fuel economy is the least of the problems with E-15. It is well documented that small engines and engines older than model year 2001 have problems with E-15 and even E-10. Here is Consumer Reports on the subject:

Even E10, the gasoline with 10-percent ethanol that's sold in most of the country, can have harmful effects on the small, non-road engines used in outdoor power equipment. Without ethanol in the fuel, gas to which you've added a stabilizer like Sta-Bil could sit in an engine for a month or two without harmful effects. But with E10 gasoline, storing a machine without starting it up regularly or, for wintertime storage (summertime for snowblowers), without running down the engine till it's dry can ruin it.

Rubber and plastic parts become brittle, and moving parts can crust up from impurities in the water that ethanol, being an alcohol, attracts.<sup>4</sup>

Members need only talk to neighbors, friends and constituents who may have small engines who have noticed such performance and reliability problems over the years even with the existing E-10 fuels. People are now even paying premium prices in order to secure [ethanol-free fuels](#) in order to protect their small engines. Given that the only benefits of E-15 is to prop up the RFS and provide additional subsidies for ethanol producers and corn growers, the costs far outweigh the benefits.

**3. What are the risks of the introduction and sale of E-15 to the owners of pre-2001 motor vehicles, boats, motorcycles, and other gasoline-powered equipment not approved to use it? Are there risks to owners of post-2001 vehicles? How do these risks compare to the benefits of the RFS?**

As stated in our answer to #2, the benefits of E-15 are far outweighed by the costs. Consumers are not better off with E-15 or even E-10.

**4. What is the likely impact, if any, of the blend wall on retail gasoline prices?**

Running up against the blend wall will increase gasoline prices. The NERA study, *Economic Impacts Resulting from Implementation of RFS2 Program*<sup>5</sup> argues that the costs could be a \$770 billion decrease in GDP by 2015. But even if this proves to be overstated, the most important point is the direction of the impacts—higher fuel costs. The blend wall gives refiners the incentive to sell more refined products outside the United States instead of purchasing RINs to comply with the RFS. This means less fuel will be available for U.S. drivers and Americans will have to deal with higher prices than would otherwise be necessary. Again, E-15 is unnecessary, increases the likelihood of engine maintenance problems and drives up costs to consumers, and yet it is mandated by law.

**5. Can blend wall implementation challenges be avoided without changes to the RFS? Is the existing EPA waiver process sufficient to address any concerns? If the RFS must be changed to avoid the blend wall, what should these changes entail? Should any changes include liability relief or additional consumer protections for addressing misfueling concerns?**

In order to resolve market uncertainty and the problems caused by the blend wall, the RFS should be repealed. The RFS was based on flawed premises. As noted in our answer to Question 1, when the RFS was passed there was a belief that the United States was running out of oil and that ethanol was a new and novel fuel that could become cost-effective with a little push from the federal government. One more flawed premise was the belief last decade that ethanol would obviously reduce greenhouse gas emissions.

The reality is that some corn-based ethanol production and other forms of ethanol production may actually increase carbon dioxide emissions rather than reduce them. According to a study published in *Science* by the Nature Conservancy and the University of Minnesota, many biofuels emit more greenhouse gases than gasoline. According to the researchers, these biofuels may produce “17 to 420 times more carbon dioxide than the fossil fuels they replace.”<sup>6</sup> Other research has come to similar conclusions. The Energy and Resources Group of the University of California, Berkeley found that “if indirect emissions [resulting from the production of ethanol] are applied to the ethanol that is already in California’s gasoline, the carbon intensity of California’s gasoline increases by 3% to 33%.”<sup>7</sup> Not only does ethanol production appear to produce more greenhouse gas emissions than petroleum production, but ethanol production and combustion may lead to worse air quality than petroleum production.<sup>8</sup>

But even if biofuel production reduces greenhouse gas emissions, producing ethanol is, nevertheless, a very expensive way to achieve this goal. According to the Congressional Budget Office (CBO), the production of corn ethanol costs \$750 per metric ton of carbon dioxide emissions avoided.<sup>9</sup> That is currently over 150 times as expensive as carbon credits in the European Union’s carbon trading scheme.

If it wasn’t enough that the RFS is based on flawed premises, because the RFS diverts so much corn into fuel, it increases global food prices. Because of this, Jean Ziegler, the former United Nations special rapporteur on the right to food, described ethanol as a “crime against humanity.”<sup>10</sup>

Because the RFS was based on flawed premises, the RFS should be repealed.

## **6. What other methods, including the use of drop-in fuels, are available to industry to ease the challenge posed by the blend wall?**

The problem is that we are asking the industry to fix a problem that should not exist in the first place. The problems with the blend wall were caused by over-exuberance for ethanol in Congress and the Administration last decade and a misidentification of fuel use and oil production trends.

The challenge posed by the blend wall was created by Congress and should be resolved by Congress. Otherwise, we are saddling American businesses with more mandates that increase costs and harm a struggling economic recovery.

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<sup>1</sup> The Institute for Energy Research (IER) is a non-profit organization that conducts intensive research and analysis on the functions, operations, and government regulation of global energy markets. IER articulates free market positions that respect private property rights and promote efficient outcomes for energy consumers and producers. IER staff and scholars educate policymakers and the general public on the economic and environmental benefits of free market energy. The organization was founded in 1989 as a public foundation under Section 501(c)(3) of the Internal Revenue Code. Funding for the institute comes from tax-deductible contributions of individuals, foundations, and corporations.

<sup>2</sup> Ford Predicts Fuel from Vegetation, NEW YORK TIMES, Sept. 20, 1925, p. 24, cited in Bill Kovarik, Henry Ford, Charles Kettering and the “Fuel of the Future”, Automotive History Review, Spring 1998, p. 7, available at <http://www.radford.edu/wkovarik/papers/fuel.html>.

<sup>3</sup> See AAA Daily Fuel Gauge Report, Apr. 5, 2013, <http://fuelgaugereport.aaa.com>.

<sup>4</sup> Consumer Report, *E15 gasoline is chief worry at outdoor equipment show*, Oct. 26, 2012, <http://news.consumerreports.org/home/2012/10/e15-gasoline-rears-its-ugly-head-at-outdoor-gear-show.html>.

<sup>5</sup> [http://www.api.org/news-and-media/news/newsitems/2013/march-2013/~media/Files/Policy/Alternatives/13-March-RFS/NERA\\_EconomicImpactsResultingfromRFS2Implementation.pdf](http://www.api.org/news-and-media/news/newsitems/2013/march-2013/~media/Files/Policy/Alternatives/13-March-RFS/NERA_EconomicImpactsResultingfromRFS2Implementation.pdf)

<sup>6</sup> Joseph Fargione et al., *Land Clearing and the Biofuel Carbon Debt*, 319 SCIENCE 1235 (2008), available at <http://www.sciencemag.org/cgi/content/abstract/1152747>.

<sup>7</sup> Alex Farrell & Michael O’Hare, *Greenhouse gas (GHG) emissions from indirect land use change (LUC)*, Energy & Resources Group University of California Berkley, Jan. 12, 2008, [http://www.arb.ca.gov/fuels/lcfs/011608ucb\\_luc.pdf](http://www.arb.ca.gov/fuels/lcfs/011608ucb_luc.pdf).

<sup>8</sup> Jason Hill et al., *Climate change and health costs of air emissions from biofuels and gasoline*, 106 PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES 2077 (2009) available at <http://www.pnas.org/content/106/6/2077.full.pdf+html>.

<sup>9</sup> Congressional Budget Office, *Using Biofuel Tax Credits to Achieve Energy and Environmental Policy Goals*, July 2010, [http://www.cbo.gov/ftpdocs/114xx/doc11477/11477\\_Summary.pdf](http://www.cbo.gov/ftpdocs/114xx/doc11477/11477_Summary.pdf).

<sup>10</sup> Grant Ferrett, *Biofuels ‘crime against humanity’*, BBC NEWS, Oct. 27, 2007, <http://news.bbc.co.uk/2/hi/americas/7065061.stm>.





April 5, 2013

The Honorable Fred Upton  
Chairman  
Committee on Energy and Commerce  
2125 Rayburn House Office Building  
Washington, DC 20515

The Honorable Henry Waxman  
Ranking Member  
Committee on Energy and Commerce  
2322A Rayburn House Office Building  
Washington, DC 20515

Dear Chairman Upton and Ranking Member Waxman:

On behalf of the Iowa Corn Growers Association, I write today in response to issues raised in your Committee's White Paper Examining the so-called "Blend Wall."

The Renewable Fuel Standard is a critical piece of our nation's energy policy. Since its enactment in 2005, it has created jobs, lessened our dependence on foreign oil, and improved the environmental footprint of our nation's transportation fuels. In 2012 alone, the RFS supported more than 300,000 jobs across the country, displaced the equivalent of 462 million barrels of imported oil, and lowered the price consumers paid at the pump by \$1.09 per gallon. It is also spurring innovation and helping drive the development of advanced and cellulosic biofuel facilities. In short, it is doing exactly what it was designed to do -- spur the development of a significant alternative to petroleum.

Building on the success of the original RFS, Congress expanded the RFS to 36 billion gallons in 2007. In addition to calling for 15 billion gallons of corn-based ethanol, Congress set aggressive targets for advanced and cellulosic biofuels produced from things other than corn starch. Congress understood that the RFS was critical to developing alternatives to petroleum. It mandated levels that would require oil companies to modify doing business as usual in protecting their market share. These levels were set purposefully to foster the continued build out of the existing ethanol industry while spurring innovation and guaranteeing a market for advanced and cellulosic biofuels. Underscoring the commitment to petroleum alternatives, Congress enacted incentives for the production of flexible fuel vehicles that can run on ethanol blends up to E85 and tax incentives for gas stations to convert pumps capable of dispensing alternative fuels such as E85. Clearly, Congress understood that requiring 36 billion gallons of renewable fuels would require blending and utilization of ethanol above E10.

The argument that the "blend wall" is an unforeseen issue that now necessitates Congress repeal the RFS is disingenuous at best. In 2007, the United States consumed 142 billion gallons of

gasoline. The so-called E-10 blend wall would have been approximately 14.2 billion gallons at the time. The Bush Administration and Congress debated the levels of the RFS and settled at 36 billion gallons -- more than double the amount of ethanol required to pierce the "blend wall." Congress understood that the RFS was a critical component in providing a needed push to open the transportation marketplace to things besides petroleum. Six years later, the RFS schedule is now reaching the critical juncture where oil companies need to stop obstructing alternatives and assist in the deployment of ethanol blends higher than 10%. Instead of doing so, they seemed to focus on impeding efforts to build out ethanol dispensing capacity and now want Congress to repeal the entire renewable fuel system that has been developed. Doing so would have serious ramifications.

The blend wall is not an insurmountable problem that requires Congressional action to address. The ethanol industry has worked diligently with EPA over the past several years to unlock barriers to increase ethanol usage in a responsible manner. EPA's approval of E15 for cars built since 2001 means that over 75% of cars and trucks on the road today can use E15 safely while saving money at the pump. Gas stations can "upgrade" their fueling equipment to dispense E15 very economically. In fact, the over 95% of the pumps sold in the United States have been guaranteed for the use of E15 for almost a decade. Additionally, EPA has worked diligently to ensure fuel marketers deploy a comprehensive misfueling mitigation plan to ensure proper legal and practical steps are taken to prohibit use of E15 in non-approved motors. Beyond E15, there are 14 million FFVs on the road that can use ethanol blends up to E85 and the RFS is already driving additional build out of E85 stations across the country precisely because of the so-called E10 blend wall. Simply put, significant accessibility of E15 and E85 will provide a means to consume ethanol as originally proposed by EPA, providing significant head room from any so-called blend wall.

In conclusion, ICGA appreciates the Committee's interest in better understanding the market dynamics surrounding the RFS. We strongly believe the RFS is doing exactly what it was intended to do. It is successfully driving adoption of renewable fuel alternatives to petroleum, supporting jobs across the country, and ensuring the United States remains a global leader in developing new energy sources here at home. We urge the Committee to stay the course and support this important piece of energy policy.

Sincerely,

A handwritten signature in black ink, appearing to read "Bruce S. Rohwer". The signature is fluid and cursive, with the first name "Bruce" being more prominent and the last name "Rohwer" following in a similar style.

Bruce S. Rohwer, President  
Iowa Corn Growers Association



# Iowa Renewable Fuels Association

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April 5, 2013

The Honorable Fred Upton  
Chairman  
House Energy and Commerce Committee  
2125 Rayburn House Office Building  
Washington, DC 20515

The Honorable Henry Waxman  
Ranking Member  
House Energy and Commerce Committee  
2125 Rayburn House Office Building  
Washington, DC 20515

Dear Chairman Upton and Ranking Member Waxman:

As the largest trade association representing Iowa's ethanol and biodiesel producers, the Iowa Renewable Fuels Association (IRFA) appreciates the opportunity to respond to your request for stakeholder comment on questions regarding the so-called blend wall.

IRFA welcomes a full, fair, and factual review of the Renewable Fuel Standard by the House Energy and Commerce Committee. However, our general observation is that the Committee's initial white paper and the corresponding stakeholder questions on the so-called blend wall have a narrow focus which, whether intended or not, is almost entirely consistent with the oil industry's point of view. With this in mind, we request the Committee to consider additional questions regarding this important topic, which IRFA has suggested and expounded upon below. As the Committee's review of the RFS proceeds, we request that the Chairman and Ranking Member ensure that subsequent RFS-related topics—all of which are complex, impacting many different stakeholders in unique ways—are approached from a more balanced perspective.

IRFA believes the points raised in the Committee's initial white paper and stakeholder questions are predicated on a false oil industry premise: namely that the so-called E-10 blend wall is real. In fact, the E10 blend wall vanished once EPA approved E15—in the most extensive testing of any fuel in history—for 2001 and newer vehicles.

In reality, in its relentless effort to obstruct the introduction of E15 and undermine the RFS at every turn, the oil industry is attempting to erect a bogus blend wall, brick by brick, to protect its virtual monopoly over the transportation fuel marketplace. This bogus blend wall is the lynch pin of the oil industry's argument to attempt to convince Congress and the public that the RFS needs to be waived

and ultimately eliminated. Under their fanciful scenario, the oil companies argue that the combination of the RFS and the bogus E10 blend wall will force them to artificially limit gasoline supplies in the U.S.

The attractiveness of this tall tale for refiners is not hard to understand. It would allow them to export more refined products to higher value foreign markets while simultaneously raising gasoline prices on Americans—all while they blame someone else and rake in the ill-gotten profits. Next they will point to artificially higher gasoline prices as creating the economic harm to necessitate a repeal or multi-year waiver of the RFS. While the basis for this argument is a fairy tale, the basics of the oil plan itself have been laid out in public by the refiners in numerous forums.

Yet, the lynch pin of the oil argument is the fiction that the E10 blend wall is real and insurmountable. Instead of simply falling for the Big Oil bluff, we urge the Committee to take a serious, balanced look at the validity of the bogus E10 blend wall argument. To that end, IRFA submits the questions below and urges the Committee to request stakeholder input on these questions in addition to the original Committee questions. To speed the process, IRFA has also provided input on the additional questions which details the specific actions and inactions that the oil industry has used in its attempt to build a bogus blend wall.

### **Additional Questions for Stakeholder Comment**

#### **1. To what extent do the oil refiners' branded contracts, which prohibit retailers from selling blends above E10, create an artificial blend wall?**

Many retailers in the United States operate under branded contracts with oil companies. These branded contracts provide retailers with brand recognition, funding for specific infrastructure upgrades and other incentives. In exchange, these branded contracts often allow oil companies to dictate which fuels that retailers may offer to consumers. IRFA is currently aware of several Iowa retailers interested in offering higher ethanol blends that are prevented from doing so under their branded contracts.

In addition, the Renewable Fuels Association (RFA) reported that after Zarco 66, a retailer in Lawrence, KS, became the first retailer in America to offer E15 as a registered fuel, “ConocoPhilips quickly threatened to terminate Zarco 66’s franchise agreement and charge Zarco 66 hundreds of thousands of dollars in penalties unless Zarco 66 started offering ‘premium’ gasoline—gasoline that would replace the ethanol housed in one of Zarco 66’s fueling tanks, and a gasoline that is likely to result in far fewer sales than the ethanol blends that would be available if Zarco 66 maintained the current ethanol contents.”<sup>1</sup>

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<sup>1</sup> RFA letter to EPA, FTC, DOE and USDA. March 19, 2013. <http://ethanolrfa.org/page/-/PDFs/RFA%20Zarco%20Letter%203-19-13.pdf?nocdn=1>

The oil refiner claim that retailers and consumers do not want E15 falls flat. It is the oil companies' own actions through the restrictions in branded contracts that often restrain E15 or E85 sales, thereby adding a brick to their artificial blend wall. And it is a bogus blend wall brick that can be removed instantaneously by the oil industry.

**2. To what extent does the oil refiners' petroleum distribution monopoly — whereby refiners refuse to make available the proper blendstock for E15 during the summer to retailers who request it — create an artificial blend wall?**

Given a century of government subsidies and pipeline loan guarantees, the oil industry has created what amounts to a fuel distribution monopoly. Today a small number of companies control the refineries, they control what goes into the pipelines, and thereby they often control — and limit — what can be sold at the “independent” corner gasoline station.

The impact of the oil industry's petroleum distribution monopoly is very real and very powerful. Pipelines provide the most cost-effective mode of transporting liquid fuels. Today, many of the pipeline/terminal systems are owned and operated by independent companies. But the real control over fuel supplies remains with the refiners. The refiners decide what products are put into a pipeline and at what fuel terminals those products are taken out.

Therefore, even if the refiners put gasoline suitable for blending with 15% ethanol into a pipeline system, they can dictate it only be taken out at Kansas City and Chicago—and not at points in between. By not providing the E15 blendstock to Iowa terminals, oil companies can effectively control the fuel choices offered at a corner gas station in Iowa. This very action was taken during the summer of 2012 in Iowa and we expect it to occur again this summer.

That is a clear example of how the oil industry's fuel distribution monopoly can prevent free market competition and thwart the will of those retailers and consumers who want to use E15, thereby creating an artificial blend wall. And it is a bogus blend wall brick that can be removed instantaneously by the oil industry.

**3. To what extent does the oil industry's opposition to equalizing the RVP requirements for E10 and E15 in Tier 3 fuel regulations create an artificial blend wall?**

Federal regulations dictate that conventional fuels during the summer (June 1 through September 15) adhere to a 9 psi limit on the Reid vapor pressure (RVP) scale (a measure of volatility of the fuel). The fuel volatility cap helps to reduce evaporative emissions.

When ethanol accounts for a minority of a fuel blend, the blended product will have a higher vapor pressure than the gasoline blendstock alone. However, in recognition of ethanol's ability to reduce tailpipe emissions, the EPA long ago granted E10 a 1 psi waiver from the 9 psi RVP summer limit. Therefore, E10 blends can have an RVP of up to 10 psi.

Even though the positive emissions impact of E15 is even greater than E10, the EPA has not granted E15 a similar one pound waiver. As a result, refiners can send a traditional 9 psi gasoline (which meets the 10 psi cap for E10) to Iowa in the summer for blending to E10. But blending 15% ethanol with that gasoline would result in a blend over the 9 psi cap for fuels other than E10.

During the winter fuel season (Sept. 16 through May 30) there is no RVP cap for conventional fuels. Therefore, the same 9 psi fuel can be used to blend both E10 and E15.

Congress or the EPA should equalize the summertime RVP limits for E10 and E15. Either both ethanol blends should be granted the one pound waiver or both fuels should be held to the standard 9 pound limit. IRFA supports either alternative, yet we understand the oil industry opposes both alternatives.

In fact, it is our understanding that early versions of the EPA's proposed Tier 3 gasoline regulations would have equalized the RVP limits for E10 and E15. However, after oil industry opposition, this provision was removed from the final proposed rule.

If both E10 and E15 had the same RVP limit then the same gasoline could be blended with both – preventing Big Oil from using this regulatory quirk to limit consumer fuel choices and create an artificial blend wall.

**4. To what extent do the bogus, Big Oil-funded anti-E15 studies (which have been completely refuted by the U.S. Department of Energy) undermine consumer confidence in E15 and create an artificial blend wall?**

In a coordinated effort to undermine consumer confidence and demand for E15, the oil industry has funded multiple bogus anti-E15 studies. One egregious example of this is the Coordinating Research Council (CRC) Project Number CM-136-09-1. This bogus study has been touted by the oil industry as its most convincing evidence that E15 is not safe for vehicles.

However, immediately after the study was released, U.S. Department of Energy (DOE) Vehicle Technologies Program Manager Patrick B. Davis issued a blistering rebuke of the study's findings and methodology. In a blog post on the DOE website, Davis stated that "the study is significantly flawed...CRC failed to establish a proper control group [and] we believe the choice of test engines, test cycle, limited fuel selection, and failure criteria of the CRC program resulted in unreliable and incomplete data, which severely limits the utility of the study."<sup>2</sup>

Similarly, the RFP for CRC Project CM-136-09-1 makes it perfectly clear that the project was designed to fail. The RFP states, "The objectives of the test program are to determine engine durability effect of E20 on a group of engines that are deemed to be sensitive to the effects of E20 as

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<sup>2</sup> Davis, Patrick B. "Getting It Right: Accurate Testing and Assessments Critical to Deploying the Next Generation of Auto Fuels." May 16, 2012. <http://energy.gov/articles/getting-it-right-accurate-testing-and-assessments-critical-deploying-next-generation-auto>



described above. The vehicles should be selected from among those that are more likely to exhibit some of the issues with E20.” The RFP goes on to say, “As indicated before, this program is designed to test engines from vehicles that are likely to be sensitive to fuels with ethanol concentrations greater than 10%.”<sup>3</sup>

Of the vehicles selected for the study, American Coalition for Ethanol Senior Vice President Ron Lamberty said the following: “Big Oil says the CRC test proves E15 will put ‘millions of vehicles at risk,’ yet there weren’t even a million of the tested vehicles sold. The vehicle models used in CRC Project CM-136-09-1 make up about one-half of one percent of the total vehicle pool approved to use E15. The eight vehicles represent less than 1 million of the 180 million cars and light trucks sold in the United States in model years 2001 and newer.”

Lamberty added, “The vehicles chosen for the test—the 2001 Honda CR-V, 2002 VW Jetta, 2004 Scion xA, 2005 Chevrolet Colorado, 2007 Ford Edge, 2007 Dodge Ram, 2009 Dodge Caliber, and 2009 Chevy Aveo—were selected because they had a well-documented history of the type of failure the test purported to be looking for, regardless of the fuel used in them. Over 300 technical service bulletins (TSB) were issued by the manufacturers of the eight tested vehicles, many which described the exact problems that caused a “fail” grade in the CRC test.”<sup>4</sup>

Clearly, CRC Project CM-136-09-1 was a contrived study with a pre-determined outcome to destroy consumer confidence in E15, and thereby create an artificial blend wall.

**5. To what extent do the numerous anti-E15 lawsuits by oil refiners, which seek to reverse the EPA’s approval of E15, cause retailers to delay in offering E15 and thereby create an artificial blend wall?**

The oil industry has engaged in continuous anti-E15 litigation following EPA’s approval of E15 for 2001 and newer vehicles. Recently, one lawsuit was appealed to the Supreme Court. The purpose of this litigation is to create uncertainty for retailers, causing them to delay decisions on whether to adopt E15 as a fuel option for consumers. This uncertainty resulting from the oil industry’s anti-E15 litigation undermines the availability of E15 in the marketplace, thereby creating an artificial blend wall. And it is a bogus blend wall brick that can be removed instantaneously by the oil industry.

**6. To what extent does legislation to ban E15 introduced by oil refiner allies in Congress cause uncertainty among retailers and thereby create an artificial blend wall?**

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<sup>3</sup> CRC Project CM-136-09-1 Request for Proposals. February 18, 2009. p. 5-6.

<http://www.crao.com/doingbusiness/RFPs/2009%20RFPs/CM-136-09-1/CM-136-09-1%20RFP.pdf>

<sup>4</sup>Lamberty, Ron. “Lies, More Lies, and Then There’s CRC Studies.” *Ethanol Producer Magazine*. April 1, 2013. <http://ethanolproducer.com/articles/9703/lies-more-lies-and-then-there-undefineds-crc-studies>

Since EPA's approval of E15 for 2001 and newer vehicles, several pieces of oil industry-backed legislation have been introduced to delay E15 adoption and to outright ban E15 from the marketplace. These legislative efforts also serve to create uncertainty for retailers, causing them to delay decisions on whether to adopt E15 as a fuel option for consumers. This uncertainty resulting from oil industry-backed legislation undermines the availability of E15 in the marketplace, thereby creating an artificial blend wall.

**7. To what extent does the oil industry trade associations' direct advocacy to discourage consumers from buying E15 where available create an artificial blend wall?**

Immediately after the first U.S. retailer began offering E15 as a registered fuel for 2001 and newer vehicles, oil industry trade associations issued press releases to discourage consumers from buying E15. On one hand the oil industry complains to lawmakers and regulators that the adoption of E15 has been slow, while on the other hand they seek to slow it. These direct advocacy efforts served to undermine consumer acceptance of E15, thereby creating an artificial blend wall.

**8. How much does the oil companies' artificial E10 blend wall cost consumers at the pump by preventing the choice of cheaper, cleaner, higher performing E15?**

It is not the RFS that raises gasoline prices. Rather, it is the direct actions of the oil industry to limit consumer access to lower cost E15 that increases the costs for motorists. If policy makers buy into the oil industry's bogus blend wall, consumers will pay more for gasoline than necessary for years to come as the oil monopoly is maintained.

According to the Center for Agricultural and Rural Development, the presence of ethanol in the fuel supply reduced gasoline prices by \$1.09 per gallon nationwide in 2011 and \$1.69 in the Midwest.<sup>5</sup> In addition, wholesale ethanol is currently priced about 50 cents per gallon cheaper than gasoline. With these facts in mind, there is no doubt that the oil industry's efforts to prevent the choice of E15—through its self-imposed, artificial blend wall—have cost consumers the opportunity to save significant amounts of cash at the pump.

In the end, it is clear there is no valid E10 blend wall. The efforts by oil companies to build a bogus blend wall can be reversed literally overnight if they so choose. To buy the Big Oil bluff would be to reward the bad actors who have spent years undermining the RFS instead of preparing for it. To gut the RFS would preserve the oil monopoly and deprive consumers of more choices at the pump – choices that are cleaner, cheaper, and homegrown. The RFS is working and must be preserved. Its fundamental intent was to crack the petroleum monopoly and it is on the verge of doing so.

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<sup>5</sup> Hayes, Dermot J. and Du, Xiaodong. "The Impact of Ethanol Production on U.S. and Regional Gasoline Markets: An Update to 2012." Iowa State University Center for Agricultural and Rural Development. May 2012. <http://www.card.iastate.edu/publications/dbs/pdffiles/12wp528.pdf>

April 5, 2013

Thank you again for the opportunity to respond to your request for stakeholder comment on the so-called blend wall. We appreciate your consideration of the additional questions and answers presented above, and we look forward to a thoughtful discussion of the RFS as the Committee continues its review throughout the year. If you have any questions regarding these comments, please contact me at 515-252-6249 or [mshaw@iowarfa.org](mailto:mshaw@iowarfa.org).

Sincerely,

A handwritten signature in black ink that reads "Monte Shaw". The script is cursive and fluid, with the first name "Monte" and last name "Shaw" clearly distinguishable.

Monte Shaw  
Executive Director

# Ken G. Glozer's Answers to Questions In House Energy & Commerce Committee's "Renewable Fuel Standard Assessment White Paper---

## Blend Wall/Fuel Compatibility Issues"

### Qualification

The white paper does not raise the two very important questions about the RFS which are---does the RFS significantly improve US energy security and does it provide positive net national economic benefits to the nation's consumers and taxpayers who pay for the program? The author assumes the Committee will raise these critically important questions in subsequent papers requesting answers from those who wish to provide answers. If this is not the case the author requests the Committee to give him the opportunity to prepare answers to the questions and submit them to the committee for the record.

### Answers to White Paper Questions

1. The author participated in both the 2005 EPA and the 2007 EI&SA legislative debate working for a number of clients on the RFS and other issues in the two Acts. The author's recollection is the blend wall issue was raised to members of congress and staffers during the process but those who controlled the action rejected the issues as being a problem for the RFS policy and its implementation. Those involved did not seek a special analysis of these issues by EIA, GAO or the CRS so the congress as a body was flying blind on this issue. Further, the Bush II Administration relied on the US Treasury officials for the design of their similar 20 in 10 program and neither DOE or EIA were requested to assess these issues.
2. Question 2 should be expanded to specifically include consumers and taxpayers because they pay for the very costly RFS and they are not specifically enumerated in the question.

From a consumer's standpoint the RFS provides no benefits and instead forces consumers to and taxpayers to pay the enormous and pervasive costs of the RFS program. Further, the RFS forces major inconveniences on certain consumers such as those who own long life small gasoline engines such as those in boats, lawn mowers, power washers, etc, that are prone to breakdown and require repair because ethanol blended gasoline clogs carburetors when the engines are not in use such as over the winter.

Getting back to the benefits, RFS promoters claim the RFS reduces gasoline prices by \$.89 cents per gallon which is analytically absurd. If this were true the surge in crude oil production in North Dakota alone over the past few years would have lowered world oil prices by \$37 per barrel (.89 x 42) and we know this has not occurred. In fact, in the past EIA and others have forecast the RFS has not lowered gasoline prices at all. With the recent run up in RIN prices

ethanol has probably raised the current price of gasoline. Even though ethanol has been and continues to be deeply subsidized by the USG it is not price competitive with petroleum gasoline on an energy content basis. A gallon of ethanol has only two-thirds the energy content of petroleum gasoline (76,000 btus per gallon versus 115,000) . How do we know this? In Friday's April 5<sup>th</sup> issue of the Wall Street Journal on page C3 under "Futures Contracts" for May 2013 RBOB gasoline price per gallon was \$2.90 and ethanol's was \$2.42. Adjusting the ethanol price for the lower btu or energy content the price per gallon of ethanol increases to \$3.63 or about 25% more than that of petroleum gasoline.

This much higher market price for ethanol , even though it is deeply subsidized, is the fatal flaw in the RFS policy. The policy forces all gasoline consumers in the US to buy a much higher priced fuel called ethanol because in a competitive marketplace ethanol would be used predominantly as an octane enhancer at much lower volumes than mandated by the RFS. In the past EIA has estimated, under a competitive market US energy policy, ethanol use would be about 8 billion gallons annually or about one half this year's RFS mandated quantity level. In other words, ethanol is economically competitive as an octane enhancer for certain refiners. Beyond the eight billion gallons annually (note that other credible forecasting entities have forecast that the eight billion gallons is much too high and ethanol for blending would be significantly lower in the 5-6 billion gallons annually range) US ethanol consumption is forced into the gasoline supply system by the RFS via EPA regulations.

This RFS forcing eliminates consumer choice taking away by federal edict the right of consumers to buy whatever gasoline they choose and instead making them buy ethanol blended gasoline that the vast majority do not want. Said another way---consumers in a competitive market would not buy much E10, E15, E85 because it is too costly and consumers are not stupid! Forcing consumers to buy these fuels because a few hundred thousand corn farmers in ten Midwestern states want to get or be rich ( as many already are) is one of the worst scams ever imposed by congress on the nation's consumers and taxpayers—some 311.8 million people in all! (note this number excludes the 200,000 or so corn famrrers)

3/4. We are at the maximum amount of ethanol that can be blended into gasoline because the vast majority of vehicles cannot burn blends that are higher than E10 and because higher blends are hugely uneconomic forcing consumers to buy ethanol to keep the corn farmers happy while they pay even higher gasoline prices. Even if all 212 million passenger vehicle in the US fleet were FFVs capable of burning E85 gasoline/ethanol blend under a US competitive market policy for energy current ethanol consumption would drop to the 5-8 billion gallons per year because ethanol is simply not economically competitive with petroleum gasoline. For example, in some locations E85 is retail priced at \$3.49 per gallon and E10 is priced at about \$3.80 per gallon. E85 is 8% lower in price. And yet the 9 million or so FFV owners do not fill up with E85 because on a tank of 25 gallons the FFV goes 500 miles on E10 and about 400 miles on E85 assuming the average FFV gets 20 miles per gallon on E10. Note that on E0 this FFV would get nearly 21 mpg and would go 525 miles on a 25 gallon tank. The "pro ethanol bunch" knows their favorite fuel is not economic but the human greed

factor seriously clouds their judgment. Whereas consumers have to budget for gasoline and go as far as he or she can and if given a choice will opt for the lower priced fuel on an mpg basis petroleum gasoline.

5. The author defers to the petroleum refining and distribution industry on this one.

6. See the answers to questions 3/4.

7. Any person of sound mind would know that if E15 pumps are added to the already dizzying array of pumps at retail stations there will be substantial miss fueling. Further, the so-called EPA E15 test of post 2001 model year vehicles is a joke. Not enough vehicles were covered; the test in terms of calendar time was too short; the huge variance in climate nationwide was not adequately tested and the impacts of improperly maintained vehicles was not tested. Only a test of several thousand vehicles made by different vehicle manufacturers run over several years in the different regions of the US including vehicles that are purposely not properly maintained would provide adequate data on the impact of E15 on these vehicles. EPA's test is woefully inadequate for what is needed to determine impacts including vehicle reliability.

EPA is not an objective regulator for the RFS and has an inherent conflict in its responsibility to protect the environment while administering the RFS. As far back as the author can remember including his days as a senior career official at the White House OMB EPA staff and political leadership have been ethanol advocates believing without the facts to support the belief that ethanol is the enviros 'Holy Grail' transportation fuel. This enormous EPA bias shows up in the way it does tests, the way it administers the RFS and also the absurd way it sets the annual blend requirement for cellulosic ethanol. All testing and production target setting should be taken away from EPA. A regulator cannot wear two hats and be objective and that is EPA's fundamental problem in this area.

8. NO! The existing EPA waiver process is a political joke. How can a pro ethanol regulator make objective decisions? The answer is they have not and never will.

The best solution to this gigantic costly boondoggle called the RFS is to immediately abolish it and go back to the competitive market policy that existed and performed extremely well from 1981 through 2004. The RFS is the moral and policy equivalent of the old DOE petroleum allocation and price controls system administered by DOE. Common sense prevailed on that USG debacle and it was abolished in 1981 after nearly ten years of futile attempts by the USG to regulate petroleum production, distribution and pricing. The RFS is the same thing and is in the process of rapidly showing the USG controllers and wealth redistributors what a mess can be made of the gasoline refining and distribution system by EPA and others. Why would we would do such a stupid policy when we are awash in North America oil production and reserves? Could it be that the RFS has become a very handy way for politicians to raise campaign funds in Midwestern states while acting like they are looking out for gasoline and food consumers?



9. Yes, substantially and this coupled with the massive North American oil production and forecasts completely eliminates the rationale for the RFS---to reduce US oil imports from the Middle East. Oil imports from the Middle East will go to zero in another five years while at the same time China has displaced the US as the largest importer of petroleum. In fact 85% of oil exports from the Persian Gulf go to Asia---mostly China. The RFS at great economic cost to the US is now freeing up Persian gulf oil for China import. To add insult to injury the US is spending \$50-60 billion annually to defend the Persian Gulf and China is the huge beneficiary of these policies. The Communist Chinese government officials can only conclude that US government leadership are just dumber than dirt!

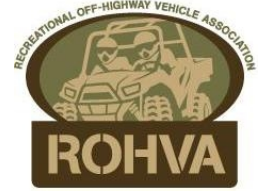
10. Why would we ever add even one more ineffective and costly method to make the dysfunctional even more dysfunctional. We are now in third generation changes to the RFS regulation and as is typical with complex market intervention federal regulation tweaking only makes the thing worse!

11. First, renewable fuel RFS related producers are an extremely small part of the US economy and even the gasoline supply industry. If we eliminated the RFS tomorrow the most efficient producers would do just fine as suppliers of ethanol for octane enhancement and in certain Midwestern states as fuel suppliers where deep state ethanol subsidies make burning E85 less uneconomic. Overall, the US economy GDP would increase if we eliminated the RFS tomorrow as this costly ineffective program would be history and the highly effective efficient competitive market policy would return.

Gasoline prices over time would be lower than if the RFS is continued, US food prices would be lower and many other benefits would evolve. Yes, the corn farmers would lose some domestic market demand but they would gain back export demand and but many are already wealthy ( just ask any Iowa corn farmer that owns more than 1,000 acres who watch the average per acre price rise from about \$2,500 in 2004 to about \$11,000 in 2012 and this does not count the substantial windmill revenues many also receive) and since the Department of Agriculture deep subsidies for corn would continue they would be just fine. Why would anyone want to continue the RFS when the country, its consumers, its taxpayers would benefit greatly from its elimination? As was the case when the DOE petroleum and allocation system was abolished in 1981 with world oil prices at then record levels of \$36 per barrel by 1990 oil prices had fallen to \$10 per barrel and the US was realizing some of the highest annual real GP growth rates since World War II. Do the nation and its 311.8 million people (note that the 200,000 or so corn farmers will lose their most lucrative welfare program) a favor and abolish the unworkable costly mess called the RFS.

If the committee has questions or wishes to pursue any of the points made in the preceding please call me on 703-723-8088 or email me. Ken G. Glozer. As a matter of background Glozer spent 26 years as a career civil servant at the White House OMB serving as OMB's energy/environment expert from 1970 through 1996. He has also written and had published a book on the RFS entitled "Corn Ethanol: Who Pays, Who Benefits" published by the Hoover Institute at Stanford University. He has also served as a consultant for the past 15 years as a consultant to nonprofits, trade groups, and private sector firms.





April 4, 2013

House Committee on Energy and Commerce  
2125 Rayburn House Office Building  
Washington, DC 20515  
Electronic submission to: [rfs@mail.house.gov](mailto:rfs@mail.house.gov)

Re: RFS Assessment White Paper,  
Blend Wall/ Fuel Compatibility Issues

Dear Chairman Upton and Members of the Committee:

The following comments are submitted on behalf of the Motorcycle Industry Council (MIC), Specialty Vehicle Institute of America (SVIA) and the Recreational Off-Highway Vehicle Association (ROHVA), not-for-profit, national trade associations representing 29 manufacturers and distributors of on-highway motorcycles, off-highway motorcycles, all-terrain vehicles (ATVs), and recreational off-highway vehicles (ROVs, also known as side-by-sides), and approximately 250 other companies involved in the aftermarket and allied trades.

Our comments primarily address the following two questions for stakeholder comment in the White Paper regarding how the use of E15 in motorcycles, ATVs and ROVs would impact vehicle manufacturers/distributors and vehicle owners.

*Questions for Stakeholder Comment*

*2. What are the benefits and risks of expanded use of E-15 to automakers, other gasoline powered equipment makers, refiners, fuel retailers, and others involved in the manufacture and sale of gasoline and gasoline-using equipment?*

*3. What are the risks of the introduction and sale of E-15 to the owners of pre-2001 motor vehicles, boats, motorcycles, and other gasoline-powered equipment not approved to use it? Are there risks to owners of post-2001 vehicles? How do these risks compare to the benefits of the RFS?*

MIC, SVIA and ROHVA opposed the issuance of a waiver for increasing the ethanol content of gasoline to 15% for the reasons outlined below and in more detail in the attached MIC's July 20, 2009 comments submitted to EPA on Clean Air Act Waiver Application to Increase the Allowable Ethanol Content of Gasoline to 15 Percent (Docket ID No. EPA-HQ-OAR-2009-0211). The EPA did not approve E15 for use in on-highway motorcycles, off-highway motorcycles, ATVs and ROVs.

### Increased Exhaust Emissions/Engine and Catalyst Deterioration

There is substantial evidence that E15 may cause significantly increased exhaust emissions from catalyst-equipped motor vehicles (relative to both E0 and E10) and premature engine failures from a wide range of vehicles and engines that are not equipped with feedback controlled fuel metering systems. Many highway motorcycles and most off-highway motorcycles and ATVs/ROVs in customer service do not incorporate feedback control to offset the effect of higher levels of ethanol. Even with feedback control of fuel metering, many vehicles do not apply sufficient adjustments to open-loop operation to offset the effect of higher levels of ethanol. Also, the long-term effect of E15 on emissions performance of feedback controlled vehicles has not been addressed.

The long term use of E15 in motorcycles, ATVs, and ROVs can lead to additional increases in exhaust emissions resulting from the deterioration of the engines and emissions control systems (especially catalytic converters) caused by higher exhaust temperatures. Higher exhaust temperature and mixture enleanment can also contribute to burned exhaust valves in 4-stroke engines, which also contributes to higher HC emissions.

The effect of E15 on catalyst deterioration may be greater for highway motorcycles and nonroad vehicles/engines than light duty vehicles because of the number of vehicles without feedback control of fuel metering. The lack of feedback control would lead to higher exhaust system temperatures over a broader range of operation, which would be expected to contribute to increased catalyst deterioration.

### Increased Evaporative Emissions

With respect to evaporative emissions, the use of E15 can increase gasoline volatility which leads to increased evaporative emissions for motorcycles, ATVs and ROVs. In addition, E15 can also increase emissions of evaporative hydrocarbons through permeation or in cases where all of the gasoline sold in an area does not contain ethanol, through commingling. Evaporative emissions can be affected by E15 due to materials compatibility issues with a variety of plastic, rubber, and metal components used in vehicles equipped with gasoline engines.

### Engine Performance and Reliability/Rider Safety

There are obviously a number of issues other than compliance with emissions standards that are of concern with the use of E15 in motorcycles, ATVs and ROVs. In the absence of feedback-controlled fuel metering systems of sufficient range, ethanol causes enleanment of the air-fuel ratio, which affects combustion stability and emissions. Durability and reliability are potentially affected by enleanment. Also durability can be affected by E15 due to materials compatibility issues with a variety of plastic, rubber, and metal components used in vehicles equipped with gasoline engines.

Premature engine failure is a serious concern for vehicles and engines that are not equipped with feedback controlled fuel metering systems. Other concerns include cold starting, driveability, reliability, and performance. While emissions may not be significantly affected by some of these problems, the adverse effects on driveability and reliability are even more important because they involve an immediate risk to human life. We do not believe these risks can be dismissed based on the argument that the use of E15 can be avoided even if it is expressly prohibited in certain vehicles and engines.

### Voiding of Manufacturer Warranty

The use of E15 could result in the voiding of the manufacturer warranties for these products, since E10 is typically the highest level of ethanol recommended by the manufacturers.

Conversely, manufacturers may need to honor warranty claims related to engine malfunction, poor driveability, and catalyst deterioration if the manufacturer is unable to prove that the use of E15 was the cause for such problems.

### In-Use Emissions Compliance/Smog Check Liability Issues

The use of E15 in motorcycles, ATVs, and ROVs also raise questions as to whether the burden of proof would lie with the owner or manufacturer if these products fail EPA in-use compliance emissions testing or state smog check inspections.

### Misfueling

Even with E15 dispenser warning labels, there is still widespread concern about consumers using E15 in products for which it is not approved. The EPA required text on the E15 warning label below does not clearly communicate that E15 is not approved for on-highway motorcycles and ROVs since many owners may consider those vehicles to be passenger vehicles.



It is expected that E15 may be sold at a lower price than regular (E10) fuel which may encourage misfueling. Furthermore, EPA is taking no action to ensure compatible fuels, such as E10, remain available and affordable for the millions of products for which E15 is not approved.

Sincerely,

Pamela Amette  
MIC Vice President



Motorcycle Industry Council Comments on  
Clean Air Act Waiver Application  
to Increase the Allowable Ethanol Content of Gasoline to 15 Percent  
Docket ID No. EPA-HQ-OAR-2009-0211

July 20, 2009

For electronic submission to: [a-and-rDocket@epa.gov](mailto:a-and-rDocket@epa.gov)  
and mailing to:

Environmental Protection Agency  
EPA Docket Center (EPA/DC), Mail Code 6102T  
Attention: Docket ID No. EPA-HQ-OAR-2009-0211  
1200 Pennsylvania Ave., NW  
Washington, DC 20460

The Motorcycle Industry Council (MIC) is a not-for-profit national trade association that represents 27 manufacturers and distributors of motorcycles and All-Terrain Vehicles and approximately 280 other companies involved in allied trades. Member companies affected by the proposed rule include Honda, Yamaha, Kawasaki, Suzuki, KTM, BMW, Piaggio, Polaris/Victory, Ducati, Triumph, Arctic Cat, and Bombardier Recreational Products. MIC opposes the issuance of a waiver for increasing the ethanol content of gasoline to 15%. There is substantial evidence that E15 may cause significantly increased exhaust emissions from catalyst-equipped motor vehicles (relative to both E0 and E10) and premature engine failures from a wide range of vehicles and engines that are not equipped with feedback controlled fuel metering systems. There is also overwhelming evidence in the literature that the addition of 15% ethanol to gasoline dramatically increases evaporative emissions relative to the fuel that has been used in the certification process.<sup>1</sup>

Exhaust emissions data the applicants have cited in support of a waiver are primarily short-term test results from vehicles with feedback controlled fuel metering systems. The long-term effect of E15 on emissions performance of feedback controlled vehicles has not been addressed. Limited data were cited for relatively rich-running small non-road engines.

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<sup>1</sup> The effect of E15 on evaporative emissions is similar to the effect of E10. Evaporative emissions are significantly higher because of increased permeation and, unless the base gasoline is substantially altered, increased volatility. Although our detailed comments do not address evaporative emissions, EPA may be legally required to deny the waiver based on the increase in evaporative emissions relative to non-oxygenated gasoline. The fact that EPA allowed E10 to become an approved fuel by electing to avoid making a determination as to whether it would cause or contribute to a failure of any emission control device or system does not change the benchmark to which future fuel formulations are to be compared. Under the Clean Air Act, the benchmark is the gasoline used during the emissions certification process, which, in most cases, is not E10.



There are three fundamental problems with the application. First, data on the long-term effect of E15 on motor vehicles have not been provided. Second, data demonstrating a significant long-term emissions increase with high ethanol content blends have been ignored. Finally, the data cited regarding small non-road engines failed to properly account for the effect of severe engine damage and associated excess emissions caused by the use of 15% ethanol. Each of these deficiencies is discussed in more detail below.

### The Long-Term Effect of E15 on Motor Vehicles

The effect of ethanol addition on the operation of a gasoline engine depends on the extent to which the fuel metering system is capable of compensating for the extra oxygen contained in the ethanol. Passenger cars and light-duty trucks compensate for the effect of ethanol during certain operating conditions by using feedback controlled fuel metering systems. An oxygen sensor monitors exhaust oxygen content and the fuel metering system adjusts the air-fuel ratio to maintain stoichiometric operation over most of the engine's operating range. By remembering the degree of enrichment most recently required to maintain a stoichiometric air fuel ratio, some systems attempt to apply the same fuel correction to open-loop operation, as occurs during warm up and wide-open-throttle operation. The capability to perform the open-loop adjustment is referred to as "adaptive learning." The extent to which adaptive learning can offset the effect of ethanol in gasoline depends on the adjustment range of the fuel metering system and the ethanol content of the gasoline.

Although all late-model light-duty vehicles with gasoline engines incorporate feedback control of fuel metering, available data indicate that many vehicles do not apply sufficient adjustments to open-loop operation to offset the effect of higher levels of ethanol. In addition, many motorcycles in customer service do not incorporate feedback control. As recently as model year 2009, one-third of California-certified Class III highway motorcycle engine families are still open-loop, and the majority of those are equipped with catalysts. The open-loop fraction for 49-state certified motorcycles is expected to be higher.<sup>2</sup>

Multiple studies indicate that increased levels of ethanol in such motor vehicles lead to increased exhaust and engine temperatures, even with many vehicles equipped with feedback fuel metering. The higher temperatures can lead to both engine deterioration and catalyst deterioration. The most relevant study related to open-loop vehicles is

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<sup>2</sup> EPA has not yet updated its website with data for 2008 or later model year motorcycles. Model year 2009 certification data from CARB's website are expected to represent 2010 and subsequent model year 49-state models because the 2009 California standards are the same as the 2010 and subsequent federal standards. Emissions control system configurations were examined for Class III motorcycles produced by Harley-Davidson/Buell, Honda, Yamaha, Suzuki, Kawasaki, BMW, KTM, Victory, Triumph, and Ducati. These manufacturers account for more than 95% of the Class III fleet. Of the 107 engine families examined, 26% use catalysts without feedback control of fuel metering. Thus, a major portion of the current and future highway motorcycle fleet will be equipped with the same type of emissions control systems that demonstrated significant increases in NO<sub>x</sub> emissions when exposed to E20 in the Orbital Engine Company study. (An additional 9% of the certified engine families use non-catalyst systems without feedback control.)

probably the 2004 Orbital Engine Company study,<sup>3</sup> which the applicants fail to mention. The Orbital study indicated dramatic increases in NOx emissions associated with the combined effects of enleanment and catalyst deterioration using a blend of 20% ethanol in gasoline.

At low mileage, the Orbital study indicates increases in NOx emissions partially offset by reductions in HC emissions. However, after 80,000 km of operation on E20, the change in emissions was +26.8% HC and +151.4% NOx; the sum of HC and NOx increased by 107.3%. As stated in the Orbital report, “The increases in tailpipe emissions have occurred due to degradation of the catalyst, the primary cause of which is the increase in the exhaust temperature caused by the use of the 20% ethanol blend during particular modes of operation.”

Although the fuel evaluated in the Orbital study was higher than 15% ethanol content, it should be noted that the duty cycle used was relative mild. As stated in report:

*It should be noted that although the cycle used for mileage accumulation is intended to specifically to (sic) test the durability of anti-pollution control devices (as determined by emissions legislation for type approval), it is not very severe, particularly in terms of catalyst temperatures. There is no doubt that the observed differences between the gasoline and E20 fuels would be considerably greater on a more severe cycle.*

Although the applicant cites a Department of Energy study<sup>4</sup> in support of its application, the results of that study indicate that E15 increased exhaust gas temperatures. Seven of the 16 passenger cars and light-duty trucks tested ran leaner at wide-open throttle (WOT) as the ethanol content of the fuel was increased. The report states, “Vehicles that ran leaner during WOT than the E0 baseline experienced higher catalyst temperatures as the ethanol content increased. The long-term effect of this catalyst temperature increase on catalyst durability is not known at the current time and requires further work.”

The exhaust temperature increase observed on 7 of the 16 vehicles in the DOE study was between 29 to 35°C for E20 vs. E0 and 20°C for E20 vs. E10. The temperature increase for E15 was about 75% of the increase measured for E20. The exhaust temperature increase observed for E20 vs. E0 is similar to what was observed in the Orbital study in which three out of five vehicles demonstrated a temperature increase ranging from 30 to 40°C. As a result, an increase in emissions similar to what was observed in the Orbital study would be expected as mileage is accumulated on the vehicles in the DOE testing program. Because the increase in exhaust temperatures is lower for E15, the emissions increase associated with E15 may be lower than for E20. However, there is no basis for concluding there will not be a significant increase in emissions from the use of E15.

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<sup>3</sup> “Market Barriers to the Uptake of Biofuels Study, Testing Gasoline Containing 20% Ethanol (E20), Phase 2B Final Report to the Department of the Environment and Heritage,” Orbital Engine Company, May 2004.

<sup>4</sup> K. Knoll, et al., “Effects of Intermediate Ethanol Blends on Legacy Vehicles and Small Non-Road Engines, Report 1 – Updated,” Report No. NREL/TP-540-43543, ORNL/TM-2008/117, National Renewable Energy Laboratory, U.S. Department of Energy, February 2009.

Indeed, the authors of the DOE report acknowledged the need for additional testing by stating “Recognizing the need for a wide range of additional tests, DOE is sponsoring a number of other studies.” The report also specifically identifies “catalyst performance and key temperatures during open-loop (WOT) operation” as being related to “full-useful-life emissions.”

The effect of E15 on catalyst deterioration may be greater for highway motorcycles because of the number of vehicles without feedback control of fuel metering. The lack of feedback control would lead to higher exhaust system temperatures over a broader range of operation, which would be expected to contribute to increased catalyst deterioration.

### The Effect of E15 on Non-Road Vehicles and Engines

Although the applicant cites the above-referenced DOE report as indicating the lack of any problem using E15 in small non-road engines, the applicant’s summary of the test results for the small non-road engines mischaracterizes what actually occurred. For example, after switching one of the engines to fuels with higher ethanol content, “the engine began to run poorly” and then eventually failed. Rather than acknowledge that this catastrophic failure was associated with the switch to higher ethanol content, the DOE report states, “Given that only one engine was tested, it is not clear whether the fuels affected the life of this engine.” When a commercially successful engine is destroyed after being switched to high ethanol content fuels, it would seem reasonable to presume that the fuel was a factor.

Similar and more obvious mischaracterizations of the data occurred in the case of the Weed Eater engines subjected to full-life testing. While running on E0, one engine failed at 41.5 hours into the 50-hour test. Two other engines running on E15 failed after 22 and 25 hours. Another engine tested on E20 would not even run. In the face of these data, the authors concluded “The effect of ethanol on durability... ..was not clear,” because engine failure also occurred on E0. This conclusion was made despite the fact that the authors observed, “With greater ethanol content, temperatures of the exhaust components, cylinder head, and cylinders generally increased.”

As noted in the DOE report, “...the engine tests confirmed that emissions and temperature can vary considerably from engine-to-engine, even among engines with the same model number, and even on E0.” Given the significant number of engine failures that occurred among the limited sample of engines tested in the DOE program, a larger, more representative sample would be expected to include engines even more significantly affected by temperature increases associated with E15.

Although the waiver criteria in the Clean Air Act do not include consideration of effects on engine durability, there are obviously excessive emissions associated with some of the effects of E15 that lead to premature engine failure. The observation that engines sometimes “run poorly” prior to failure is a clear indication of misfire that would cause excessive HC emissions. Higher exhaust temperature and mixture enleanment also can contribute to burned exhaust valves in 4-stroke engines, which also contributes to higher HC emissions.

## Emissions Effects Based on CARB and EPA Models

The addition of ethanol and other oxygenates to gasoline is generally acknowledged to result in decreases in exhaust emissions of hydrocarbons (HC) and carbon monoxide (CO) and increases in emissions of oxides of nitrogen (NO<sub>x</sub>). However, as discussed above, long term operation using fuels with higher ethanol content than engines and vehicles were designed to tolerate can lead to additional increases in exhaust emissions resulting from the deterioration of engines and emissions control systems (especially catalytic converters) caused by higher exhaust temperatures.

With respect to evaporative emissions, the use of ethanol in gasoline can increase gasoline volatility which leads to increased evaporative emissions. In addition, ethanol can also increase emissions of evaporative hydrocarbons through permeation or in cases where all of the gasoline sold in an area does not contain ethanol, through commingling.

Although emissions test data for on- and non-road gasoline powered vehicles and engines on ethanol gasoline blends above the E10 level are limited, it is possible to estimate the potential impacts on mobile source emissions by extrapolating available algorithms used for purposes of estimating the impacts of gasoline oxygenates on emissions inventories. In order to estimate the potential E15 effect on emissions relative to E10, MOBILE6.2 and NONROAD2008 were used along with input data for estimating emissions on a nationwide basis for calendar years 2010 and 2020.

MOBILE6.2 was modified to account for the higher oxygen content of E15 by extending the linear relationships between oxygen content and exhaust HC and CO emissions in the model. As MOBILE6.2 does not account for changes in NO<sub>x</sub> emissions associated with oxygenates, the model was modified to account for oxygenate impacts on NO<sub>x</sub> emissions using the California Air Resources Board's Predictive Model.<sup>5</sup> Because the Predictive Model includes non-linear relationships between oxygen content and NO<sub>x</sub> emissions, two extrapolation methods were used, the first involved direct use of the relationship and the second involved linear extrapolation of the effects based on the slope near the E10 point. A third method, based on the statistical analysis of vehicle emissions data collected on E0, E10, and E20 fuels under the CRC E-74b program was also used to estimate the potential impact of E15 on exhaust emissions. In this case, MOBILE6.2 was run assuming E0 and then adjusted using the relationships established between oxygen content and emissions from the CRC E-74b data.

Impacts of E15 on non-road emissions were obtained directly from the NONROAD2008 which was specifically configured for that purpose when it was released by EPA in April, 2009. It should be noted that in all cases, no adjustment was made to account for the potential use of E15 to result in greater deterioration of emission control system performance.

With respect to evaporative emissions, the impact of ethanol depends on whether the approximately one pound per square inch (psi) increase in RVP associated with its

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<sup>5</sup> Available at <http://www.arb.ca.gov/fuels/gasoline/premodel/premodel.htm>

addition to gasoline at 10-15% is allowed or whether the ethanol blend must be adjusted to meet the same volatility standards as non-oxygenated gasoline. Under existing federal regulations, in those areas of the country where reformulated gasoline is required, the RVP of E15 blends (if they are allowed) would be subject to the same RVP requirements that apply to other RFG blends including E10 blends. In areas where reformulated gasoline is not required, the volatility of most ethanol-gasoline blends is required to be the same as non-oxygenated gasoline. There is however a one psi RVP exemption for ethanol gasoline blends sold in non-RFG areas provided that:

*“The concentration of the ethanol, excluding the required denaturing agent, must be at least 9% and no more than 10% (by volume) of the gasoline.”*

Given the above language, it appears that E15 blends will not be eligible for the 1 psi exemption absent changes to the existing federal regulations. However, the following language in the waiver application makes it appear that the applicant assumes E15 and E10 will be blended to the same RVP:

*The volatility of the two fuels also is essentially identical.*

In fact, the applicant specifically states on page 25 of the application:

*Growth Energy proposes that this waiver be granted with a condition requiring E-15 to conform to ASTM fuel volatility specifications for the area and time of year where it is used.*

With the requested condition, E15 could even have higher volatility than E10. Since there will obviously be pressure on EPA to allow the same RVP exemption for E15 as is allowed for E10, we have prepared emission estimates with and without accounting for a 1.0 psi RVP waiver.

The analysis also addressed evaporative emissions related to ethanol permeation. For non-road sources, permeation estimates were obtained from the NONROAD2008 model which, in addition to being configured to estimate impacts of E15 blends, includes an algorithm that adjusts permeation emissions as a function of fuel ethanol content. For on-road vehicles, a methodology developed by Air Improvement Resource, Inc.<sup>6,7,8</sup> was used along with the algorithm from the NONROAD2008 model for adjusting permeation emission rates as a function of ethanol content. With respect to this assumption, it should

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<sup>6</sup> “Effects of Gasoline Ethanol Blends on Permeation Emissions Contribution to VOC Inventory from On-Road and Off-Road Sources,” prepared by Air Improvement Resource for the American Petroleum Institute, March 3, 2005.

<sup>7</sup> “Continuing Ethanol Permeation Issues” presented by Air Improvement Resource to CARB, August 25, 2006. Presentation can be found at <http://www.arb.ca.gov/fuels/gasoline/meeting/2006/mtg2006.htm>.

<sup>8</sup> “Updated Final Report Effects of Gasoline Ethanol Blends on Permeation Emissions Contribution to VOC Inventory from On-Road and Off-Road Sources, Inclusion of E-65 Phase 3 Data and Other Updates,” prepared by Air Improvement Resource for the American Petroleum Institute, May 24, 2007.

be noted that it is consistent with the trend of permeation emissions increasing with increasing ethanol content observed in the CRC E-65-3 study, although that effect was not found in that study to be statistically significant at the 95% confidence level.

The results of the emissions analysis are shown in Table 1 for on-road sources. Table 1 presents nationwide summer emissions of VOC, NO<sub>x</sub>, and CO for calendar years 2010 and 2020 assuming that all reformulated and conventional gasoline is either E10 or E15. The difference in emissions associated with the substitution of E15 for E10 is shown both on an absolute and on a percentage basis where positive numbers indicate higher emissions with E15 and negative numbers indicate lower emissions with E15. Finally, the effect of eliminating the one psi RVP exemption is shown.

As shown, if E15 is provided an RVP exemption, the increase in on-road NO<sub>x</sub> emissions estimated using all three methodologies is greater than the estimated reduction in VOC emissions. If E15 is not provided an RVP exemption, the VOC reductions associated with the reduction in volatility are greater than the estimated increases in NO<sub>x</sub> emissions using two of the three methodologies. The NO<sub>x</sub> increase still exceeds the VOC reduction for the methodology involving the use of MOBILE6.2 with non-linear NO<sub>x</sub> effects due to oxygenate content. In all cases the higher oxygenate content of E15 leads to greater reductions in CO emissions than estimated with E10.

<b>Table 1</b> <b>Estimated Nationwide Impacts of E15 on On-Road Gasoline Vehicle Emissions</b> <b>(tons per summer day unless noted)<sup>a</sup></b>							
Method	Fuel	VOC		NO <sub>x</sub>		CO	
		2010	2020	2010	2020	2010	2020
MOBILE6.2 + Linear NO <sub>x</sub> Effect	E10	7393	4772	12231	5696	70718	60878
	E15	7264	4655	12441	5812	66819	57807
	Change (TPD)	-129	-117	+210	+116	-3899	-3071
	Change (%)	-1.7	-2.4	+1.7	+2.0	-5.5	-5.0
MOBILE6.2 + Non-Linear NO <sub>x</sub> Effect	E10	7393	4772	12231	5696	70718	60878
	E15	7264	4655	13016	6195	66819	57807
	Change (TPD)	-129	-117	+785	+499	-3899	-3071
	Change (%)	-1.7	-2.4	+6.4	+8.8	-5.5	-5.0
CRC E-74b	E10	7578	4917	12350	5799	60332	51308
	E15	7537	4870	12637	5978	56527	48021
	Change (TPD)	-41	-47	+287	+179	-3805	-3287
	Change (%)	-0.54	-0.96	+2.3	+3.1	-6.3	-6.4
Additional Change Assuming 1.0 psi RVP Increase Not Allowed in Non-RFG Areas		-489	-269	-	-	-	-

<sup>a</sup>Note plus sign indicates increased emissions with E15.



Table 2 presents the results of the analysis for non-road sources. The results for non-road sources are similar to those observed for on-road sources with estimated NO<sub>x</sub> emission increases associated with E15 being greater than estimated VOC reductions unless there is no RVP wavier available for E15.

<b>Table 2</b> <b>Estimated Nationwide Impacts of E15 on Non-Road Gasoline Vehicle Emissions</b> <b>(tons per summer day unless noted)<sup>a</sup></b>							
Method	Fuel	VOC		NO <sub>x</sub>		CO	
		2010	2020	2010	2020	2010	2020
NONROAD2008	E10	9273	5033	6503	3800	61116	55326
	E15	9134	4951	6675	3947	53578	48150
	Change (TPD)	-139	-82	+172	+147	-7538	-7176
	Change (%)	-1.5	-1.6	+2.6	+3.9	-12.3	-12.9
	Additional Change Assuming +1.0 psi RVP Not Allowed in Non-RFG Areas	-105	-93	-	-	-	-

<sup>a</sup>Note plus sign indicates increased emissions with E15.

## Other Issues

There are obviously a number of issues other than compliance with emissions standards that are of concern with higher ethanol content blends. As discussed above, premature engine failure is a serious concern for vehicles and engines that are not equipped with feedback controlled fuel metering systems. Other concerns include cold starting, driveability, reliability, and performance. While emissions may not be significantly affected by some of these problems, the adverse effects on driveability and reliability are even more important because they involve an immediate risk to human life. For the reasons discussed below, we do not believe these risks can be dismissed based on the argument that the use of E15 can be avoided even if a waiver is granted.

MIC is particularly concerned about the suggestion in the Federal Register notice that “a fuel up to E15 could meet the criteria for a waiver for some vehicles and engines but not for others.” EPA’s argument that “Any approval, either fully or partially, is likely to elicit a market response to add E15 blends to E10 and E0 blends in the marketplace, rather than replace them” is inconsistent with the applicant’s stated need for waiver approval because of the “blendwall” that exists. It is also disingenuous for EPA to assert that “consumers would merely have an additional choice of fuel” should the waiver be granted because of infrastructure limitations. Infrastructure does not exist for E15 and lower ethanol content blends to be simultaneously provided at the retail level. The approval of E15 would be in no way analogous to the introduction of unleaded gasoline in the 1970s. Unleaded gasoline was not intended to replace leaded gasoline, which had

a higher octane level. Continued availability of leaded gasoline at the retail level was never in question. In contrast, E15 is clearly intended to replace E10. Not only do the applicants not dispute this, they clearly state it.

## Conclusions

For the reasons summarized above, the applicant has not demonstrated that E15 will not cause or contribute to a failure of any emission control device or system. In fact, reports cited by the applicant demonstrate that E15 significantly increases exhaust gas temperatures, which has been shown in a study not cited by the applicant to cause a significant increase in emissions over the longer term from vehicles with feedback fuel metering using E20. A comprehensive testing program evaluating the potential long-term effects of E15 will be required to demonstrate that E15 does not cause or contribute to a failure of an emissions control system.<sup>9</sup> A draft plan for evaluating the effects of E15 on motorcycles and all-terrain vehicles will be provided to EPA within the next two weeks. Studies cited by the applicant also indicate that E15 will cause premature engine failures from a wide range of vehicles and engines that are not equipped with feedback controlled fuel metering systems. Depending on the specific failure mode, excessive emissions may also be associated with these failures.

Because of the immediate risk to human life, the non-emissions-related problems created by E15 for vehicles and engines without feedback control of fuel metering cannot be ignored. It does not appear to be practical to eliminate such risks by assuming that E15 can somehow be limited to use in certain categories of vehicles and engines.

The MIC also supports the comments submitted by the Alliance for a Safe Alternative Fuels Environment (AllSAFE) that address the bifurcation and misfueling problems associated with a “partial” mid-level ethanol fuel waiver.

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<sup>9</sup> It is our understanding that the Coordinating Research Council is currently considering such a program for light-duty vehicles.



April 6, 2013

The Honorable Fred Upton  
Chairman  
House Committee on Energy  
and Commerce  
2125 Rayburn House Office Building  
Washington, DC 20515

The Honorable Henry Waxman  
Ranking Member  
House Committee on Energy  
and Commerce  
2322A Rayburn House Office Building  
Washington, DC 20515

Dear Chairman Upton and Congressman Waxman,

Thank you for providing NACS with the opportunity to reply to the questions you posed relative to the Renewable Fuels Standard (RFS) and the impending blend wall. NACS represents the convenience and fuel retailing industry, which operates more than 121,000 fuel retailing outlets, sells 80% of the fuel in the United States and completes nearly 40 million fill-ups daily.

In general, NACS believes that the fundamental assumptions that guided Congress' decision to expand the RFS in 2007 have changed. At that time, most expected the nation's fuel demand and reliance on imported energy supplies to continue on an unrelenting upward trajectory. Today, these assumptions are no longer accurate – yet the program enacted in 2007 remains unchanged.

The domestic fuels market is dynamic and conditions are ever changing. As such, it is important any long-term fuels policy be constructed with inherent flexibility to accommodate such changing market conditions. If not, the market is bound to encounter unintended consequences, most of which will be very difficult and potentially expensive to overcome. Ultimately, all expenses incurred by the market will be borne by the consumer. We are beginning to encounter such challenges with the implementation of the RFS and it is appropriate that Congress begin asking questions about the implementation strategy and the effect this program will have on the market.

NACS appreciates your interest in reviewing the complex issues surrounding this program and encourages you to proceed cautiously, to avoid politically charged reactionary policies and to consider options that will promote regulatory certainty and enable the market to deliver to the consumer the fuels they demand in the most cost efficient manner possible.

Thank you for your interest and I hope our comments below are helpful.

Sincerely,

A handwritten signature in black ink, appearing to read "John Eichberger", is set against a light pink rectangular background.

John Eichberger  
Vice President, Government Relations

**The Association for Convenience & Fuel Retailing**

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**1. To what extent was the blend wall anticipated in the debates over the Energy Policy Act of 2005 and the Energy Independence and Security Act of 2007?**

In 2005, the Renewable Fuels Standard was set to achieve a target volume of 7.5 billion gallons by the year 2012. The concept of a “blend wall” did not exist. At that time, 7.5 billion gallons was projected to represent only 4.9% of the projected gasoline market of 153.71 billion gallons in 2012. This could easily be accommodated by no more than 10% ethanol concentrations in gasoline.

In 2007, the second phase of the RFS boosted the target from 7.5 billion gallons in 2012 to 36 billion in 2022. Again, at that time the projected fuels market was on an upward trajectory. In 2007, the nation consumed around 144 billion gallons of gasoline and the Energy Information Administration (EIA) projected an annual increase rate of 1.3% through 2030.<sup>1</sup> At that rate, it was expected the gasoline demand level in 2022 might be as high as 174.90 billion gallons. In such a scenario, a 36 billion gallon mandate would represent only 20.01% of the gasoline market.

The following table plots the RFS2 implementation schedule against the EIA projected 1.3% growth in gasoline demand at each stage of the RFS2. The table presents the renewable fuels volume requirement (essentially, corn-based ethanol) and the entire RFS requirement.

<b>2007 Renewable Fuels as Part of Projected Gasoline Demand<sup>2</sup></b>						
	<b>Gasoline Demand</b>	<b>Traditional Renewable Fuels</b>	<b>% of Gasoline Demand</b>	<b>RFS2</b>	<b>RFS2 less Biodiesel</b>	<b>% of Gasoline Demand</b>
2008	145.97					
2009	147.87					
2010	179.79					
2011	151.74					
2012	153.71	13.2	8.59%	15.2	14.2	9.24%
2013	155.71	13.8	8.86%	16.55	15.55	9.99%
2014	157.73	14.4	9.13%	18.15	17.15	10.87%
2015	159.89	15	9.38%	20.5	19.5	12.20%
2016	161.86	15	9.27%	22.25	21.25	13.13%
2017	163.96	15	9.15%	24	23	14.03%
2018	166.09	15	9.03%	26	25	15.05%
2019	168.25	15	8.92%	28	27	16.05%
2020	170.44	15	8.80%	30	29	17.01%
2021	172.66	15	8.69%	33	32	18.53%
2022	174.90	15	8.58%	36	35	20.01%

<sup>1</sup> U.S. Energy Information Administration Annual Energy Outlook 2007 with Projections to 2030, Table A11.

<sup>2</sup> Ibid.

By this table, it is clear that when RFS2 was established, it was assumed that gasoline containing 10% ethanol or less would be sufficient to satisfy the renewable fuels obligated volume throughout the program and when combined with advanced biofuels the total obligated volume would only exceed the E10 blend wall in 2014, which would conceivably be satisfied by increasing volumes of E85 sales to flexible fuel vehicles.

The problem is that 2007 represented the peak of gasoline demand and the forecasts for gasoline market growth will not be realized. In fact, gasoline demand declined 7.5% between 2007 and 2012. With the enactment of the new corporate average fuel economy standards, gasoline market demand is projected by EIA to decline another 18.4% by 2040.<sup>3</sup> The result is that the blend wall is now upon us. The following chart plots the effect of RFS2 on the new market realities and most recent EIA projections:

<b>2013 Renewable Fuels as Part of Projected Gasoline Demand<sup>4</sup></b>						
	<b>Gasoline Demand</b>	<b>Traditional Renewable Fuels</b>	<b>% of Gasoline Demand</b>	<b>Total RFS2</b>	<b>RFS2 less projected E85 &amp; Biodiesel Volumes</b>	<b>Remaining RFS2 as % of Gasoline Demand</b>
2012	133.8	13.2	11.2%	15.2	14.09	10.5%
2013	133.8	13.8	11.2%	16.55	15.44	11.5%
2014	131.8	14.4	11.4%	18.15	16.36	12.4%
2015	131.2	15	11.4%	20.5	18.59	14.2%
2016	130.6	15	11.5%	22.25	20.23	15.5%
2017	130.0	15	11.5%	24	21.98	16.9%
2018	129.2	15	11.6%	26	23.98	18.6%
2019	128.5	15	11.7%	28	26.09	20.3%
2020	127.9	15	11.7%	30	28.32	22.2%
2021	126.2	15	11.9%	33	31.32	24.8%
2022	124.5	15	12.1%	36	34.09	27.4%

## **2. What are the benefits and risks of expanded use of E15 to automakers, other gasoline powered equipment makers, refiners, fuel retailers and others involved in the manufacture and sale of gasoline and gasoline using equipment?**

For fuel retailers, E15 presents a number of challenges and a few opportunities. First, retailers are required by OSHA regulations to use equipment that has been listed by a nationally recognized testing laboratory as compatible with the fuel the equipment is storing and dispensing. The primary testing laboratory is Underwriters Laboratories (UL). However, prior to 2010 UL had not listed a single dispenser as compatible with any ethanol concentration greater than 10%. Further, given UL's policy, no device listing can be revised. Consequently, retailers who wish to sell E15 must acquire a new dispenser

<sup>3</sup> U.S. Energy Information Administration Annual Energy Outlook 2013 Early Release.

<sup>4</sup> Ibid.

that has been listed as compatible with the product. Dispensers can cost upwards of \$20,000 and few retailers are willing to dispose of functional and modern dispensers in order to sell a new fuel for which demand is uncertain.

Recently, the two primary device manufacturers (Gilbarco and Dresser-Wayne) have obtain UL listing for retrofit kits for some of their units to upgrade their compatibility to accommodate fuels containing up to 25% ethanol. These units are currently available for \$2,000-\$4,000 per kit and may be available for more than 50% of the dispensers in the market. This reduces the costs for many retailers, but the expense still equates to nearly 10% of a stores annual pre-tax income – and consumer demand remains uncertain.

Converting dispensers to ensure their compatibility with E15 is feasible because it is easy to determine the current compatibility of the units at a location. More complicated is determining the compatibility of underground equipment. Retail fueling facilities can often change hands several times after a tank system is installed, leaving the current owners uncertain of the listing status of the equipment underground, beyond the traditional fuels available in the market. This equipment can include the underground storage tank itself, connecting pipes and fittings, submersible equipment and other ancillary units. It is essential that these units be compatible with E15 as well, yet determining their compatibility or replacing units known to be non-compatible is a much more expensive enterprise. Anytime a retailer proceeds to crack open concrete to address underground equipment issues, costs can quickly exceed \$100,000 per location.

Assuming a retailer can confirm or upgrade his equipment to ensure compatibility with E15, there remain other challenges. The rule authorizing the sale of E15 restricts its use to vehicles manufactured after 2001 and prohibits its use in earlier models or small engines. EPA issued a misfueling mitigation rule requiring the placement of dispenser decals near the E15 selector and requiring additional measures, but there are no physical applications available to prevent the consumer from misfueling. Further, it is expected that a significant percentage of consumers may not know in what year their vehicles were manufactured.

Retailers are in a very precarious situation. If a retailer offers E15 and a consumer uses that fuel in a non-approved engine, the retailer can be held responsible for violating the Clean Air Act and subject to fines of up to \$37,500 per violation. Unfortunately, even if the retailer is fully compliant with EPA's misfueling mitigation requirements he may be subject to such fines by the Agency or subject to litigation under the Act's right of private action.

Further, because the many engine manufacturer owner's manuals and warranties do not authorize the use of E15, the retailer may be subject to liability for engine damage or for selling a fuel that voids the consumer's warranty. This exposure could threaten the very livelihood of the facility.

Despite these challenges, some retailers may find opportunities in the sale of E15 and other mid-level ethanol blended fuels. Current ethanol prices provide a cost advantage for

retailers who can safely and legally sell the product. Retailers know that consumers will select a competing retailer if they can save as little as two or three cents per gallon, so an E15 product offered at a lower price point can help a retailer attract price sensitive consumers. Further, such lower prices often provide the retailer with greater margins. However, while these economic conditions may provide opportunities, the lower retail price point could exacerbate the concerns regarding misfueling.

**3. What are the risks of the introduction and sale of E15 to the owners of pre-2001 motor vehicles, boats, motorcycles and other gasoline-powered equipment not approved to use it? Are there risks to owners of post-2001 vehicles? How do these risks compare to the benefits of the RFS?**

Fuel retailers are not qualified to answer this question.

**4. What is the likely impact, if any, of the blend wall on retail gasoline prices?**

There are several factors that could affect retail fuel prices as a result of the blend wall. First, as we approach this threshold it is likely that the value of RINS will increase. This follows traditional economic supply and demand theory – greater demand for RINS and limited availability will result in increased prices. These increased prices will be passed through the system and ultimately reflect in retail prices paid by the consumer.

At some point, there will not be sufficient RINS available to satisfy the obligated parties volumetric requirements. This may result in a variety of scenarios:

- 1) The obligated parties might maintain production levels to satisfy consumer demand and will be fined by EPA. It is unclear at this point, however, how these fines will be assessed. The Clean Air Act carries a maximum penalty of \$37,500 per violation – but what is a violation? Will one violation be assessed to a refinery for failing to meet its obligations in the calendar year? Or will that refinery be assessed one violation for every day it did not meet its RVO? Or will that refinery be assessed one violation for every gallon of fuel produced that did not meet the RVO? Or will up to four violations be assessed because there are four obligated volume requirements under the RFS2? These are questions yet to be answered but could impose additional costs on the system anywhere from \$37,500 per refinery per year to billions of dollars.
- 2) The obligated parties might reduce production to lower their RVO and facilitate compliance with the RFS2. This will short the market and, following economic theory, as demand outpaces supply will result in elevated prices and increased imports of refined product.
- 3) The obligated parties might decide to export their production that exceeds their ability to satisfy their RVO. RINS are only required for fuel that is sold in the United States. In this scenario, obligated parties can maintain production and revenues while limiting their RFS2 liability exposure. The result will be similar to scenario two in which domestic supply runs short, imports increase and prices react.



**5. What is the timing of the implementation challenges related to the blend wall? Will some entities face difficulties earlier than others?**

Fuel retailers are not qualified to answer this question.

**6. Could the blend wall be delayed or prevented with increased use of E85 in flexible fuel vehicles? What are the impediments to increased E85 use? Are there policies that can overcome these impediments?**

The short answer is yes – if more flexible fuel vehicle owners were to refuel with E85 more frequently and volumes of E85 sales increased, this would facilitate compliance with the RFS2 and delay the effect of the blend wall. However, this is unlikely to happen.

In 2012 there were 10.7 million FFVs in the United States, representing 4.8% of the light duty vehicle market. This is a very small potential market for E85 consumers. And these consumers were not loyal E85 buyers. In fact, the average FFV consumed only 14.35 gallons of E85 during the entire year of 2012.<sup>5</sup>

Some will argue this is because there are insufficient E85 stations available. But this is not the only reason. In Minnesota, the state with the most E85 refueling stations in the nation (343 in 2012), E85 sales dropped 25.8% between 2012 and 2013 from 19.8 million to 14.7 million gallons.<sup>6</sup> Some reasons for the decline in popularity of E85 could be the reduced energy density of the fuel (E85 delivers up to 30% fewer miles per gallon than gasoline) and the inability of retailers to sell the product at a price that compensates for this lack of energy and the inconvenience of consumers having to refuel more frequently.

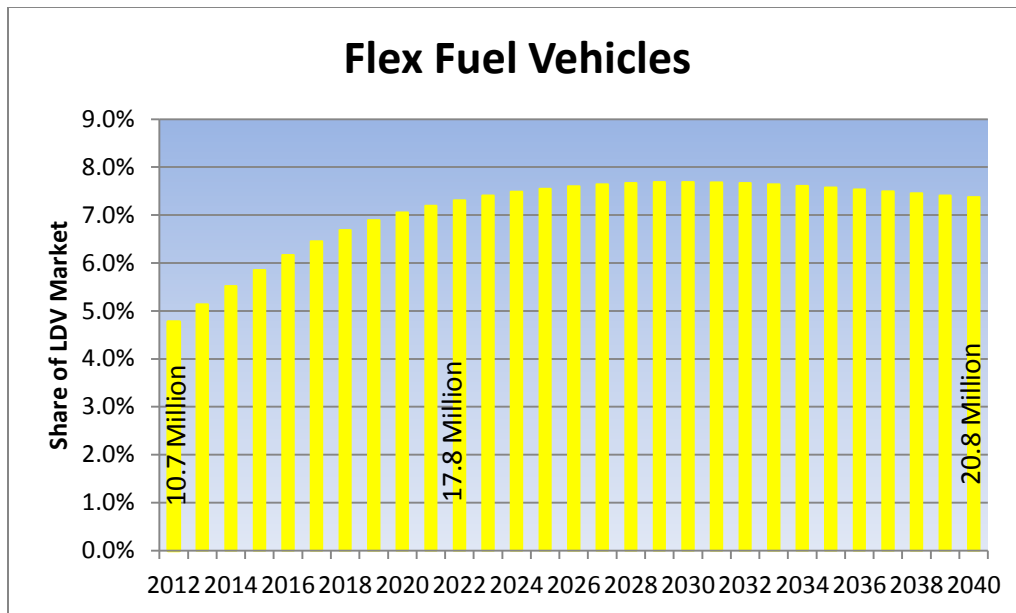
Looking forward, it is unlikely this situation will change. According to EIA, the forecast for FFVs in the market is not reassuring to retailers considering adding an E85 pump. The market share for FFVs is expected to peak at less than 8% of the market – meaning that retailers will be able to market the product to fewer than 1 of every 10 customers.<sup>7</sup>

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<sup>5</sup> Ibid.

<sup>6</sup> 2013 Minnesota E85 + Mid-Blends Station Report, Minnesota Department of Commerce, Division of Energy Resources

<sup>7</sup> U.S. Energy Information Administration, Annual Energy Outlook 2013 Early Release.



At the same time, E85 infrastructure faces the same equipment restrictions that face E15 – all equipment must be UL listed as compatible with E85 and there were no listed dispensers prior to 2010. Some retailers have also reported that E85 listed dispensers cost several thousand dollars more than E10 listed dispensers.

Some have argued that blender pumps are the solution. Blender pumps have been in use in the retail industry for decades, mixing premium with regular to deliver mid-grade from a two tank configuration. These same devices can blend ethanol with gasoline, but they must be listed as compatible with the products being blended – just like dedicated E15 or E85 units.

Federal policies to incentivize retailers to install E85 infrastructure and revisions to PMPA to allow E85 to be sold under the canopy of branded locations have not resulted in increased consumer demand. It is not possible to legislate or regulate consumer behavior. The recent reclassification of E85 to include all fuels containing 51-73% ethanol provides greater flexibility for retailers to offer flexible fuel options that deliver better fuel efficiency. This help to offset the consumer reluctance to E85 but it is a marketing strategy that must be employed by the retailers, not something the government can influence.

**7. Is E15 misfueling unavoidable? Are there lessons from the labeling and dispensing of diesel, E85 and other fuels that prevent their misfueling that can also be applied to E15? What specific actions are companies taking to address potential misfueling concerns under MMPs?**

Misfueling cannot be prevented completely. There remain situations in which consumers fuel gasoline vehicles with diesel fuel, diesel vehicles with gasoline and E85 into non-FFVs. Even with nozzle size restrictions, it is impossible to prevent consumer misfueling. Diesel nozzles are larger than gasoline nozzles and it takes effort for the consumer to put

diesel into a gasoline engine – but it happens. When lead was removed from gasoline, the fill pipes on unleaded vehicles were restricted to prevent the introduction of leaded fuel. However, consumers used funnels and can openers to enable fueling with leaded fuel to save a couple pennies per gallon. There is no magic bullet to prevent misfueling.

That said, there has to be a concerted effort to educate the consumers as new fuels are brought to market. During the misfueling rule public comment period, NACS and other stakeholders strongly encouraged EPA to facilitate a public-private partnership to educate consumers. This has not happened and it is likely that consumers do not know what E15 is and what it would do to their vehicles if used improperly. Since most consumers make decisions based upon price, there is a significant learning curve that can only be addressed in a coordinated and collaborative education campaign.

**8. Can blend wall implementation challenges be avoided without changes to the RFS? Is the existing EPA waiver process sufficient to address any concerns? If the RFS must be changed to avoid the blend wall, what should these changes entail? Should any changes include liability relief or additional consumer protections for addressing misfueling concerns?**

To avoid the blend wall without addressing the structure of the RFS would require significant behavior change on the part of consumers, such as an increase in the use of E85 by those driving flexible fuel vehicles, and the introduction to the market of “drop in” ready qualified renewable fuels in sufficient quantities – and at competitive prices – to bridge the gap between the blend wall and the obligated volumes. NACS is not optimistic that these developments will occur, let alone occur in time to meet the obligations of the RFS.

The EPA waiver process is reactive by design – it only authorizes the Administrator to waive portions of the RFS if it can be determined significant economic harm will develop in the absence of such a waiver. During negotiations over RFS2, there were discussions concerning the role of an “on-ramp” vs and “off-ramp.” NACS advocated for the prior, in which the Administrator would evaluate market conditions and make a determination on the subsequent year’s RVO based upon realistic expectations that the market could accommodate the required volumes without imposing unnecessary costs on the system and consumers.

The RFS2 was enacted with the latter concept, by which the Administrator can only act after the market is clearly set to fail in its efforts to comply with the RFS requirements. NACS believes that this process should be re-evaluated and that consideration should be given to converting to an on-ramp strategy, providing the Administrator with additional flexibility to adjust the RFS program in response to the pace of market development.

NACS further believes that the RVO schedule enacted in RFS2 must be reformed to reflect the market realities associated with declining motor fuel demand in the nation. As presented above in response to Question 1, the assumptions that guided Congress in 2007 have changed dramatically. Rather than a gasoline market projected to reach 174.9 billion

gallons in 2022, the new projection is for that market to reach 124.5 billion gallons. As a result, the RFS2 program's effect on the market has increased from a potential 20% market share to more than 27%. This has also accelerated the blend wall and reduced the time available for new, more compatible fuels to enter the market.

NACS believes that the RFS should be reformed to represent a percentage of the motor fuels market and that the percentage should be reduced from the original target of 20% to provide the market with a more realistic chance to satisfy the requirements. Further, the Administrator should be authorized to reduce that volume obligation further in the event the market is unable to accommodate the higher volumes envisioned by the program.

In addition, NACS believes that changes should include some degree of liability protection for market participants, such as those envisioned in H.R.1214, the Domestic Fuels Protection Act. These reforms would ensure that retailers would not have to replace compatible equipment due to a regulatory technicality, that consumers would be adequately informed regarding the proper use of non-compatible fuels and that they would share responsibility for the consequences associated with misuse of that fuel. NACS members want the ability to offer their consumers innovative new fuels, but they should not have to unnecessarily replace suitable equipment and they should not bear responsibility for the unlawful actions of individuals who are not representing their businesses.

**9. Have the 2017 and Later Model Years Light Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy standards for cars and light trucks changed the implementation outlook of the RFS?**

These new regulations have absolutely changed the outlook for the RFS. The two tables presented above in response to Question 1 are the most clear examples of the effect of these rules on the market's ability to accommodate the RFS. The 2013 Annual Energy Outlook is based upon a model that incorporates the new regulations to project fuel demand through 2040. While the demand destruction from 2007-2012 was primarily caused by the recession, the reduced demand for the next 30 years is a direct derivative of these new regulations affecting the vehicles market.

**10. What other methods, including the use of drop-in fuels, are available to industry to ease the challenge posed by the blend wall?**

The introduction of true drop-in fuels, at sufficient volumes and at a price competitive level, would greatly enhance the market's ability to surpass the blend wall. However, there are few indicators that this can come to fruition in the near future.

Enactment of equipment compatibility and misfueling provisions contained in H.R. 1214 would reduce the cost and risk of introducing new fuels like E15 at the retail level of trade. This could facilitate the availability of new fuels, but it must be paired with a consumer education campaign concerning the appropriate uses and benefits of these new fuels in order to encourage proper adoption.

**11. What are the impacts on renewable fuel producers if the RFS is changed to avoid the blend wall?**

Fuel retailers are not qualified to answer this question.



April 4, 2013

The Honorable Fred Upton  
Chairman  
Committee on Energy and Commerce  
U.S. House of Representatives  
Washington, DC 20515

The Honorable Henry Waxman  
Ranking Member  
Committee on Energy and Commerce  
U.S. House of Representatives  
Washington, D.C. 20515

Dear Chairman Upton and Ranking Member Waxman:

NAFA Fleet Management Association welcomes the opportunity to participate in the House Energy and Commerce Committee's process for reviewing the renewable fuel standard (RFS). The RFS was created in the Energy Policy Act of 2005 and greatly expanded under the Energy Independence and Security Act of 2007.

Enclosed please find NAFA's responses to several of the questions posed in the first white paper which addressed the so-called blend wall and fuel compatibility issues.

If you or your staff has any questions or need additional information, please feel free to contact me or Patrick O'Connor, NAFA's U.S. Legislative Counsel at 202/223-6222.

Sincerely,

A handwritten signature in black ink that reads "Phillip E. Russo". The signature is written in a cursive, flowing style.

Phillip E. Russo, CAE  
Executive Director

**Responses of the NAFA Fleet Management Association  
House Energy and Commerce Committee  
Renewable Fuel Standard Assessment White Paper  
Blend Wall/Fuel Compatibility Issues  
April 5, 2013**

**Background:** NAFA is the not-for-profit association for professionals who manage fleets of sedans, public safety vehicles, trucks, and buses of all types and sizes, and a wide range of military and off-road equipment. NAFA's Full and Associate members are responsible for the specification, acquisition, maintenance and repair, fueling, risk management, and remarketing of more than 3.5 million vehicles.

Whether a commercial industry or public service, NAFA members play an integral part in today's business environment. The more "traditional" fleet vehicles of passenger cars, vans, and SUVs managed by our members total 1.4 million and account for \$45 billion dollars in assets. And, this doesn't even account for the additional quarter million police sedans; 58,000-plus emergency vehicles; and 386,000 pieces of specialty equipment used by public service fleets, as well as commercial ones!

The fleets that NAFA Members handle are as diverse as the organizations they work for. Our members are key fleet decision-makers -- corporate and government fleet executives, who manage specification, acquisition, and maintenance of millions of vehicles, including sedans, SUVs, vans, light-, medium- and heavy-duty trucks, and specialized highway and off-road equipment. NAFA's members manage fleets for corporations covering a wide range of manufacturing and service organizations, governments (whether local, state or federal), or public service entities (public safety, law enforcement, educational institutions, utilities, etc.); still other Members serve financial institutions, insurance companies, non-profit organizations, and the like.

NAFA has long supported federal environmental and energy policies, including the renewable fuels standard (RFS) that reach the entire motoring public and return benefits to fleets and the general public. An assessment of the RFS is appropriate as the use of alternative fuels has increased and fuel efficiency standards and fuel economy measures have reduced gasoline use nationwide. For fleets, fuel is often the single most important operating cost. As such, fleets are constantly adopting strategies to reduce fuel use and improve vehicle efficiencies.

**Questions for Stakeholder Comments**

1. To what extent was the blend wall anticipated in the debates over the Energy Policy Act of 2005 and the Energy Independence and Security Act of 2007?



**Response:** It was difficult at the time the Acts were passed to anticipate the reduction in fuel use by the driving public and the positive impact of federal fuel economy standards.

2. What are the benefits and risks of expanded use of E-15 to automakers, other gasoline powered equipment makers, refiners, fuel retailers, and others involved in the manufacture and sale of gasoline and gasoline-using equipment?

**Response:** There are many technical and practical concerns that must be addressed, including the potential for E-15 to damage vehicle engines of all model years and for misfueling of vehicles older than model year 2001 and other gasoline powered equipment not approved for E-15 use. We take very seriously the statements of vehicle and engine manufacturers that E-15 will damage engines, void warranties and reduce fuel efficiency. Despite EPA's recent E-15 labeling rule, there will be a bifurcated fueling system and, inevitably, this will lead to misfueling of gasoline powered equipment and vehicles older than model year 2001.

E-15 requires that fuel dispensing equipment be modified at retail sites and central fleet refueling facilities. Preliminary studies are beginning to show that the increased ethanol content is harming some critical components in storage tanks such as probes, and line leak detectors. In regards to storage tanks a petroleum retailer would be required either to change over an existing storage tank to E-15 or install another dispensing system.

Underground storage tanks and associated equipment capable of storing and dispensing E-15 are not widely available. As a result, very few sites are prepared to sell E-15 fuel with their existing fueling dispensing system. To sell E-15, retailers are required by OSHA and fire codes to use dispensing system equipment listed by a national testing laboratory, such as UL. EPA rules require that the equipment be proven compatible with E-15. Further, state and local requirements for E-15 vary from state to state. In addition, the use of existing dispensing systems presents the potential for leakage from the piping into the groundwater.

3. What are the risks of the introduction and sale of E-15 to the owners of pre-2001 motor vehicles, boats, motorcycles, and other gasoline-powered equipment not approved to use it? Are there risks to owners of post-2001 vehicles? How do these risks compare to the benefits of the RFS?

**Response:** Although fleet managers strongly support protecting and sustaining our environment, the potential difficulties and related expenses that will result by introducing E-15 before it is fully evaluated will outpace our ability to address the mechanical problems that will result. Further, fuel costs will increase because of the decreased energy

**content delivered per gallon. As a major consumer of vehicles and engines, we are concerned with the potential impact on both light-duty engines, as well as non-covered engines, including engine failure, corrosion, materials incompatibility, catalyst degradation, water-in-fuel and phase separation, higher exhaust temperatures, increased pollution emissions, and reduced useful life of the vehicle or engine.**

**The marketplace was not ready for E-10 when it was introduced and it is definitely not ready for the introduction of E-15. Fleet managers witnessed the negative effects when E-10 was introduced on marine and specialized equipment and older gasoline powered equipment and vehicles, and on some older fuel dispensers. We now expect the same negative effects as fleets, fuel stations and racks add storage and the equipment to dispense both E-10 and E-15.**

**There are many technical and practical concerns that must be addressed, including the potential for E-15 to damage vehicle engines of all model years and for misfueling of pre-2001 and other gasoline powered equipment not designed for use with E-15.**

**E-15 presents a risk for 2001 and newer vehicles. Carburetors, valves, hoses, etc. degrade and/or clog at an accelerated rate when the presence of ethanol is introduced. Small equipment engines, such as lawn mowers, weed whackers, and generators are subject to ethanol degradation. Even when draining the engines after use of fuel, residue is left behind that can be harmful to these engines.**

**Engines built since the 1990s are lasting longer. Replacing these assets due to engine damage or failure to conform to E-15 standards is an unnecessary cost.**

4. What is the likely impact, if any, of the blend wall on retail gasoline prices?

**Response: NAFA cannot say with any certainty what the effect might be on retail gasoline prices, but urges the Committee to avoid any solutions to the RFS issue that increase the cost of fuel.**

5. What is the timing of the implementation challenges related to the blend wall? Will some entities face difficulties earlier than others?

**No response.**

6. Could the blend wall be delayed or prevented with increased use of E-85 in flexible fuel vehicles? What are the impediments to increased E-85 use? Are there policies that can overcome these impediments?

**Response: The blend wall could be delayed or prevented with the use of E-85. As the white paper points out, there are roughly 9 million flexible fuel vehicles that are designed to run on blends containing up to 85 percent ethanol (E-85) out of 225 million passenger vehicles in the U.S.**

**In order to increase the use of E-85, light duty passenger vehicles manufactured after 2013 should be required to be compatible with E-85. However, any such requirement must be coupled with policies that expand the availability of public E-85 refueling facilities.**

7. Is E-15 misfueling unavoidable? Are there lessons from the labeling and dispensing of diesel, E-85 and other fuels that prevent their misfueling that can also be applied to E-15? What specific actions are companies taking to address potential misfueling concerns under MMPs?

**Response: The reality is that misfueling is unavoidable and human error will always be present. There have been lessons learned that could mitigate misfueling. Color coding the gas tank cap on the vehicle and color coding the nozzle at the pump is one way. Another way is to make the shape and or the size of the nozzle correspond to a certain fuel and by engineering the receptacle on the vehicles to match the corresponding nozzle, for example triangular nozzle and triangular receptacle or ½ inch nozzle and ½ inch receptacle.**

8. Can blend wall implementation challenges be avoided without changes to the RFS? Is the existing EPA waiver process sufficient to address any concerns? If the RFS must be changed to avoid the blend wall, what should these changes entail? Should any changes include liability relief or additional consumer protections for addressing misfueling concerns?

**Response: NAFA supports appropriate liability relief for addressing misfueling concerns. However, liability relief should not be applicable to any person who delivers fuel to a centralized fleet refueling facility if the fuel delivered is materially different from the fuel that the fleet manager ordered.**

9. Have the 2017 and Later Model Years Light Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy standards for cars and light trucks changed the implementation outlook of the RFS?

**Response: From the fleet perspective, the new acquisition of more fuel efficient cars and light trucks has been part of a proactive strategy to reduce petroleum use and fuel costs.**

10. What other methods, including the use of drop-in fuels, are available to industry to ease the challenge posed by the blend wall?

**Response: NAFA supports the use of drop-in fuels provided such fuels are compatible with the existing fueling infrastructure. We urge, however, that there be limited flexibility to the states who wish to take a different approach for demonstrating compatibility. More stringent or varied state and local requirements can obviate the benefits. We also note that components of UST systems that are certified by a national laboratory or approved by a manufacturer are distributed into many states, if not nationally, and, thus, compatibility requirements should be applied nationally.**

11. What are the impacts on renewable fuel producers if the RFS is changed to avoid the blend wall?

**Response: The impact of renewable fuel producers does need to be carefully considered, including the substantial investments these producers have made in response to federal energy and environmental policy.**



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April 5, 2013

U.S. House Committee on Energy and Commerce  
Chairman Fred Upton  
Ranking Member Henry Waxman  
2125 Rayburn House Office Building  
Washington, DC 20515

Submitted via Email: [RFS@mail.house.gov](mailto:RFS@mail.house.gov)

RE: Committee White Paper on Renewable Fuel Standard and Ethanol Blend Wall

Dear Chairman Upton and Ranking Member Waxman:

Thank you for the opportunity to weigh in on the recent white paper regarding concerns about the ethanol blend wall in the domestic gasoline market. We appreciate your efforts to better understand the issues related to the Renewable Fuel Standard (RFS), which we believe is already one of the most effective U.S. energy policies in recent history. We look forward to working with both Congress and the Administration as we shift toward a true “all of the above” energy approach to strengthen our economic and energy security.

The National Biodiesel Board (NBB) is the national trade association representing the biodiesel industry as the coordinating body for research and development in the United States. Since 1992 when it was founded, NBB has developed into a comprehensive industry association that coordinates and interacts with a broad range of stakeholders including industry, government and academia.

Before we discuss some of the eleven questions highlighted by the Committee, it is important to note that the Biomass-based Diesel section of the RFS is working as intended. Since the program began in 2010, our industry has produced more biodiesel, than is required by the program and is lowering diesel fuel prices to consumers and as we look to the future, we anticipate that we will continue to do so.

Gallon for gallon, BTU for BTU, energy balance for energy balance, and with the added benefit of reducing greenhouse gas emissions by more than 50% when compared to the diesel fuel it replaces. Biodiesel is the singular best transportation fuel produced on a commercial scale in this country.

The E&C initial white paper raised 11 questions. As representatives of the U.S. biodiesel industry, we will respond to questions Nos. 8, 10 and 11.

*Question No. 8: Can blend wall implementation challenges be avoided without changes to the RFS? Is the existing EPA waiver process sufficient to address any concerns? If the RFS must be*

*changed to avoid the blend wall, what should these changes entail? Should any changes include liability relief or additional consumer protections for addressing misfueling concerns?*

NBB Response: When it comes to making\proposing changes to the RFS, the biodiesel industry is concerned about the issue of unintended consequences. The Biomass-based Diesel program is working well and as intended. If Congress begins the process of making dramatic changes to the RFS and the overall fuels policy of the country, because of the blend wall, then we are concerned that the Biomass-based Diesel program and the Advanced Biofuels program may be compromised or perhaps even eliminated. We urge caution in dramatically restructuring the program.

*Question No. 10: What other methods, including the use of drop-in fuels, are available to industry to ease the challenge posed by the blend wall?*

NBB Response: Biodiesel is a renewable, clean-burning diesel replacement that is reducing U.S. dependence on foreign petroleum, creating jobs and improving the environment. Made from a diverse mix of feedstocks such as recycled cooking oil, agricultural oils, and animal fats, it is the first and only EPA-designated Advanced Biofuel in commercial-scale production across the country. It can be used in existing diesel engines without modification, with the vast majority of engine manufacturers supporting blends of up to 20 percent biodiesel.

Since 2010, the RFS has required a minimum volume of biomass-based diesel to be blended into the U.S. fuel stream. This has provided a stable marketplace for biodiesel that has stimulated investment and job creation. The program has been a remarkable success. Over the past two years, biodiesel production hit records of more than 1 billion gallons annually – *exceeding RFS requirements by a combined total of some 300 million gallons*. Biodiesel currently accounts for the vast majority of Advanced Biofuel production in the U.S., and the industry has strong potential for future growth with significant capacity in existing, in-the-ground refineries and an increasingly diverse portfolio of production feedstocks. The industry has plants in almost every state in the country.

This untapped capacity for growth is relevant to the blend wall question because, while biodiesel qualifies as an Advanced Biofuel under the RFS, biodiesel and the Renewable Identification Numbers (RINs) generated in the production of biodiesel can also help meet the RFS obligations for conventional biofuel (i.e. ethanol).

To be clear, the blend wall is an issue that is unique to the gasoline pool. Biodiesel is used as a replacement to diesel fuel and heating oil. However, the RFS is structured so that advanced biofuels can be used to satisfy both the advanced fuels category and the conventional category. As a result, obligated parties can use RINs generated on each gallon of biodiesel to meet both advanced and conventional obligations. Additionally, because of its enhanced energy content compared with ethanol, one gallon of biodiesel counts as 1.5 RINs while one gallon of ethanol counts as 1 RIN.

We can easily produce more biodiesel. At just over 1.0 billion gallons of production in each of the past two years our industry operates at about 1/3 capacity – so from a production perspective

we underperform or underutilize our capacity each year. At these levels we can't be as efficient as we would be if we operated at full capacity. In the most recent analysis of biodiesel and renewable diesel facilities that are registered with EPA (February 8, 2013) there is approximately 3.5 billion gallons of capacity coming from approximately 225 biodiesel facilities. In any event, we are realistic about our future, in the near term, and as an industry we don't expect to be producing at full capacity 24 hours a day, 7 days a week and 365 days a year anytime soon. However as an industry, we look forward to the opportunity of producing increasing real volumes of biodiesel in 2013 and beyond. In 2013 for the first time since the RFS was created, the biodiesel industry is looking forward to a robust year of production. There are many market factors that will assist in moving our industry into greater volumes of production in 2013.

This feature of the program adds significant flexibility, and while biodiesel traditionally has been used to fill the advanced obligations, it is important to remember that it could be used to satisfy some portion of the conventional requirement as well under the right market circumstances. This could drive additional demand for biodiesel, generating significant benefits for the nation, including:

- ***Jobs and Economic Impact:*** A recent study found that the U.S. biodiesel industry supported more than 60,000 jobs across the country in 2012, along with \$3.2 billion in household income, \$6.1 billion in GDP, and at least \$628 million in federal, state and local tax revenues. In many rural areas of the country, biodiesel plants are the driving force of the local economy. Additionally, providing choice in the fuels market will help reduce our dependence on global oil markets and protect consumers from perennial oil price spikes that act as a tax on consumers and stunt economic growth.
- ***Reducing our Dependence on Foreign Oil:*** NBB has established a goal of replacing 10 percent of the on-road U.S. diesel pool – or more than 3 billion gallons of biodiesel – by 2022. Biodiesel can play a major role in expanding domestic refining capacity and reducing our reliance on foreign oil. Each gallon of biodiesel produced in the U.S. displaces an equivalent amount of petroleum diesel fuel with a clean-burning, efficient fuel that keeps economic activity and profits here in the U.S.
- ***Improving the Environment:*** Biodiesel is the only EPA-designated Advanced Biofuel with commercial-scale production nationwide. According to the EPA, biodiesel reduces lifecycle greenhouse gas emissions by 57 percent to 86 percent compared to petroleum diesel. With some 4.6 billion gallons used since 2005, biodiesel has reduced lifecycle greenhouse gas emissions by 74 billion pounds – the same impact as removing 5.4 million passenger vehicles from America's roadways. Additionally, the EPA consistently cites tailpipe emissions from traditional diesel – primarily from trucking fleets other heavy-duty vehicles – as a major national health hazard. Substituting higher amounts of biodiesel for traditional diesel fuel is the simplest, most effective way to immediately reduce harmful emissions known to cause health problems.
- ***Lowering Consumer Prices:*** In recent years, with help from the RFS and the biodiesel tax incentive, biodiesel could be purchased by fuel distributors at a lower price than petroleum diesel, resulting in estimated consumer savings of \$120 million in 2013.



- Michael Whitney, Love's Travel Stops/Musket Corp.: "Over the course of the past year delivered biodiesel prices have been lower than diesel prices. Accordingly, wholesale marketers of diesel have been able to offer biodiesel blends at the rack at a discount to clear diesel (diesel without biodiesel). These discounts have varied over the course of the year from as little as \$0.0025 (1/4 of a cent) to as much as 4-5 cents per gallon."
  - Carlo Luri, General Manager of Bently Biofuels in Minden, Nev.: "The reason we invested in biofuels in the beginning is that we expected fuel prices to go up long term. When you have a commodity like fuel impacted by so many different things in the world, it's not just the continued escalation of prices, but price volatility. The price of fuel can jump up, but it also can come down just as fast. We have to be able to weather the upturns and the downturns. We've been able to sell biodiesel for less than petroleum for almost a year now."
- **Livestock Benefits:** A number of livestock production groups including the National Pork Producers Council are on record supporting biodiesel production because it reduces livestock costs. First, similar to the market for used cooking oil, biodiesel production has created a strong new market for animal fats that increases the per-head value of livestock and reduces price pressures on meat and dairy products. In addition, the protein meal from soy – a staple in animal diets – is less expensive today because of the demand for biodiesel. Increased demand for the oil used in biodiesel production leads to larger supplies of protein-rich meal, which suppresses prices. Biodiesel uses only oil from soybean crops and none of the meal.

*Question No. 11: What are the impacts on renewable fuel producers if the RFS is changed to avoid the blend wall?*

NBB Response: In 2013, with the current RFS as drafted by Congress and as implemented by the EPA, nearly every biofuel producer in the Nation struggles with profitability in the fuels marketplace. If Congress were to make changes to the program that would lower ethanol volumes because of the blend wall, then nearly every biofuel producer, investor and market participant would be compromised. The confidence by the private sector in the ability of Congress to make decisions related to long-term energy policy would continue to erode and would lead to further reductions in the amount of capital that might otherwise be directed to the biofuels sector. The NBB is concerned about the long term erosion of the program.

Thank you again for the opportunity to submit comments on this important subject. Should you have any questions or need further information, please don't hesitate to call me at 202-737-8801. I can also be reached via email at [asteckel@biodiesel.org](mailto:asteckel@biodiesel.org).

Best Regards,

Anne Steckel  
Vice President, Federal Affairs  
National Biodiesel Board



April 5, 2013

The Honorable Fred Upton  
Chairman  
Committee on Energy and Commerce  
2125 Rayburn House Office Building  
Washington, DC 20515

The Honorable Henry Waxman  
Ranking Member  
Committee on Energy and Commerce  
2322A Rayburn House Office Building  
Washington, DC 20515

Dear Chairman Upton and Ranking Member Waxman:

On behalf of the National Corn Growers Association, I write today in response to issues raised in your Committee's White Paper Examining the so-called "Blend Wall."

The Renewable Fuel Standard is a critical piece of our nation's energy policy. Since its enactment in 2005, it has created jobs, lessened our dependence on foreign oil, and improved the environmental footprint of our nation's transportation fuels. In 2012 alone, the RFS supported more than 300,000 jobs across the country, displaced the equivalent of 462 million barrels of imported oil, and lowered the price consumers paid at the pump by \$1.09 per gallon. It is also spurring innovation and helping drive the development of advanced and cellulosic biofuel facilities. In short, it is doing exactly what it was designed to do -- spur the development of a significant alternative to petroleum.

Building on the success of the original RFS, Congress expanded the RFS to 36 billion gallons in 2007. In addition to calling for 15 billion gallons of corn-based ethanol, Congress set aggressive targets for advanced and cellulosic biofuels produced from things other than corn starch. Congress understood that the RFS was critical to developing alternatives to petroleum. It mandated levels that would require oil companies to modify doing business as usual in protecting their market share. These levels were set purposefully to foster the continued build out of the existing ethanol industry while spurring innovation and guaranteeing a market for advanced and cellulosic biofuels. Underscoring the commitment to petroleum alternatives, Congress enacted incentives for the production of flexible fuel vehicles that can run on ethanol blends up to E85 and tax incentives for gas stations to convert pumps capable of dispensing alternative fuels such as E85. Clearly, Congress understood that requiring 36 billion gallons of renewable fuels would require blending and utilization of ethanol above E10.

The argument that the "blend wall" is an unforeseen issue that now necessitates Congress repeal the RFS is disingenuous at best. In 2007, the United States consumed 142 billion gallons of

gasoline. The so-called E-10 blend wall would have been approximately 14.2 billion gallons at the time. The Bush Administration and Congress debated the levels of the RFS and settled at 36 billion gallons -- more than double the amount of ethanol required to pierce the "blend wall." Congress understood that the RFS was a critical component in providing a needed push to open the transportation marketplace to things besides petroleum. Six years later, the RFS schedule is now reaching the critical juncture where oil companies need to stop obstructing alternatives and assist in the deployment of ethanol blends higher than 10%. Instead of doing so, they seemed to focus on impeding efforts to build out ethanol dispensing capacity and now want Congress to repeal the entire renewable fuel system that has been developed. Doing so would have serious ramifications.

The blend wall is not an insurmountable problem that requires Congressional action to address. The ethanol industry has worked diligently with EPA over the past several years to unlock barriers to increase ethanol usage in a responsible manner. EPA's approval of E15 for cars built since 2001 means that over 75% of cars and trucks on the road today can use E15 safely while saving money at the pump. Gas stations can "upgrade" their fueling equipment to dispense E15 very economically. In fact, the over 95% of the pumps sold in the United States have been guaranteed for the use of E15 for almost a decade. Additionally, EPA has worked diligently to ensure fuel marketers deploy a comprehensive misfueling mitigation plan to ensure proper legal and practical steps are taken to prohibit use of E15 in non-approved motors. Beyond E15, there are 14 million FFVs on the road that can use ethanol blends up to E85 and the RFS is already driving additional build out of E85 stations across the country precisely because of the so-called E10 blend wall. Simply put, significant accessibility of E15 and E85 will provide a means to consume ethanol as originally proposed by EPA, providing significant head room from any so-called blend wall.

In conclusion, NCGA appreciates the Committee's interest in better understanding the market dynamics surrounding the RFS. We strongly believe the RFS is doing exactly what it was intended to do. It is successfully driving adoption of renewable fuel alternatives to petroleum, supporting jobs across the country, and ensuring the United States remains a global leader in developing new energy sources here at home. We urge the Committee to stay the course and support this important piece of energy policy.

Sincerely,

A handwritten signature in cursive script that reads "Pamela D. Johnson". The signature is written in dark ink and is positioned above the typed name and title.

Pam Johnson, President  
National Corn Growers Association



April 1, 2013

The Hon. Fred Upton, Chairman  
Committee on Energy and Commerce  
United States House of Representatives  
Washington, DC 20515

The Hon. Henry Waxman, Ranking Member  
Committee on Energy and Commerce  
United States House of Representatives  
Washington, DC 20515

Dear Chairman Upton and Ranking Member Waxman:

With more than 1500 members representing boat, engine, trailer, and accessory manufacturers, the National Marine Manufacturers Association is the largest trade association representing the recreational marine manufacturing industry. We very much appreciate the opportunity to comment on the issue of ethanol blends in gasoline. Our industry has been at the forefront of testing of such blends, working under the auspices of the United States Department of Energy to test the effects of non-ethanol gasoline, gasoline with 15% ethanol content by volume, and gasoline blends containing butanol. Our comments today are restricted to the effects of e15 blend on marine engines.

As you can readily see from the attached comments, we have determined that e15 blends of ethanol would cause considerable damage to the 7.5 million outboard engines in use in this country today. This damage is unnecessary and can be avoided by freezing the ethanol content of gasoline at 10% by volume. NMMA has never been anti-ethanol. We are simply opposed to fuel blends that will ruin our engines and place lives at risk.

If you would like additional information on the tests we conducted or wish to discuss our submission, please feel free to contact NMMA Legislative Director Jim Currie at 202 737-9760 or at [jcurrie@nmma.org](mailto:jcurrie@nmma.org).

Sincerely,

Thomas J. Dammrich  
President

**Executive Committee**

Chairman, NMMA  
Mark Schwabero  
Mercury Marine

Vice Chairman, NMMA  
Joan Maxwell  
Regulator Marine

Treasurer, NMMA  
Bill Watters  
Syntec Industries

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**Response to House Energy & Commerce Committee  
White Paper #1 on the Renewable Fuel Standard  
Submitted by the  
National Marine Manufacturers Association  
April 1, 2013**

**Question #2: What are the benefits and risks of expanded use of E-15 to automakers, other gasoline powered equipment makers, refiners, fuel retailers, and others involved in the manufacture and sale of gasoline and gasoline-using equipment?**

**Answer:** Outboard engines are perhaps the toughest gasoline engines made, but they are not designed to run on e15 blend gasoline and will be damaged if such an ethanol blend is used in them. No manufacturer of outboard engines warrants their engines to run on an ethanol blend above 10% by volume, and all of them state unequivocally that using an ethanol bend above 10% will void the engine's warranty. The reason for this warning is quite simple: testing has demonstrated that blends at 15% ethanol will absolutely destroy an outboard engine.

Mercury Marine, a division of the Brunswick Corporation located in Fond du Lac, Wisconsin, has been a manufacturer of recreational marine engines since 1939, and it currently makes and sells more marine engines than any other manufacturer in the world. In 2010 and 2011 Mercury Marine tested e15 blend fuel in three different Mercury outboard engines. These tests were conducted at the Mercury Marine test facility in Fond du Lac by Mercury personnel under contract to the US Department of Energy and coordinated by the National Renewable Energy Lab (NREL). The final report was released by the Department of Energy in October 2011 and can be found at the following web site:

<http://www.nrel.gov/docs/fy12osti/52909.pdf>

The objective of these tests was to understand the effects of running a 15% ethanol blend on outboard marine engines during 300 hours of wide open throttle (WOT) endurance testing—a typical marine engine durability test. Three separate engine families were evaluated. A 9.9 HP carbureted four-stroke engine and a 300 HP supercharged electronic fuel injected four-stroke engine represented current products. A 200 HP electronic fuel injected two-stroke engine was chosen to represent the legacy products still in widespread use today. Two engines of each family were evaluated. One engine was endurance tested on e15 fuel, while a second control engine was endurance tested on ethanol-free gasoline.

Ethanol is an oxygenator. E10 fuel has 3% oxygen, while e15 fuel has 5% oxygen. In a typical marine engine this additional oxygen makes the fuel burn hotter, and the higher temperatures can reduce the strength of the metallic components. In addition, because of the chemical interaction, ethanol can cause compatibility issues with the other materials in the fuel systems.

Mercury was able to complete the entire 300 hour test running e15 in the 9.9 HP engine. Test results indicated poor running quality, including the occurrence of engine misfires toward the end of the test.

The poor run quality caused an increase in exhaust emissions. In addition, there were increased carbon deposits in the engine on the underside of the pistons and on the ends of the rods, indicating higher engine temperatures. The photo at the end of this narrative shows the difference in the carbon deposits on the engines run on e0 and e15. Additionally, deterioration of the fuel pump gasket was evident on the e15 engine. This deterioration of the gasket could lead to fuel pump failure, disabling the engine.

The 300 HP four-stroke supercharged Verado engine did not complete the endurance test on e15 fuel. The engine encountered a valve failure after 285 hours of endurance testing. As the photos clearly show, one valve broke apart, which ended the test, and two others developed cracks. These are quality valves constructed of Inconel, a high-temperature alloy. Even so, when Mercury did metallurgical analysis on this engine, it found that the cause of these fractures was deteriorated mechanical strength due to high metal temperature. The next photos show a comparison of the pistons and connecting rods from the Verado engine, also indicating that the e15 test engine operated at elevated temperatures.

The 200 HP two-stroke engine using e15 fuel also failed to complete the endurance test. It failed a rod bearing at 256 hours of testing, resulting in catastrophic destruction of the engine. The photo clearly shows the damage. There was so much damage to the engine that Mercury could not determine the exact cause of failure. Two-stroke engines mix the fuel and the oil and use that mixture to distribute the oil to the critical interfaces such as the bearings and cylinder walls, and ethanol may have an effect on the dispersion or lubricity of the oil mixed with the fuel.

Despite the limited nature of this testing, several significant issues were identified. In addition to the need for more 2-stroke lubrication system testing, more testing is needed to understand how e15 fuel affects marine engines during other operating conditions. Examples would include starting, acceleration/deceleration, and the effect of e15 fuel on marine engines that are stored with fuel in the system over long periods of time, as occurs regularly with marine engines.

What is presented in this response today—and what is available at the DOE website in full—are the results of the limited testing conducted on three of Mercury’s outboard engine families. This study showed how fueling marine engines with e15 may cause a variety of issues for owners and can lead to premature engine failure. There are approximately 7.5 million outboard engines in use today, and every one of them would be threatened with damage or destruction if e15 became the common fuel in the marketplace.

If we extrapolate to other types of engines such as those in motorcycles, snowmobiles, and all-terrain vehicles (ATVs)—which is perfectly fair and reasonable, as the combustion chemistry is the same as for marine outboards—we can see the potential for even more extensive repair and replacement costs to the American consumer, costs that could range into the billions of dollars. If you have a lawnmower or a chain saw or a generator, the principles are the same: high heat comes from the additional oxygen in an e15 blend, and high heat will damage your engine. And if you have an older automobile or truck—anything older than 2001 model year—the EPA says you should not run e15 in it. There are over 120 million older vehicles of this type on American roads today.

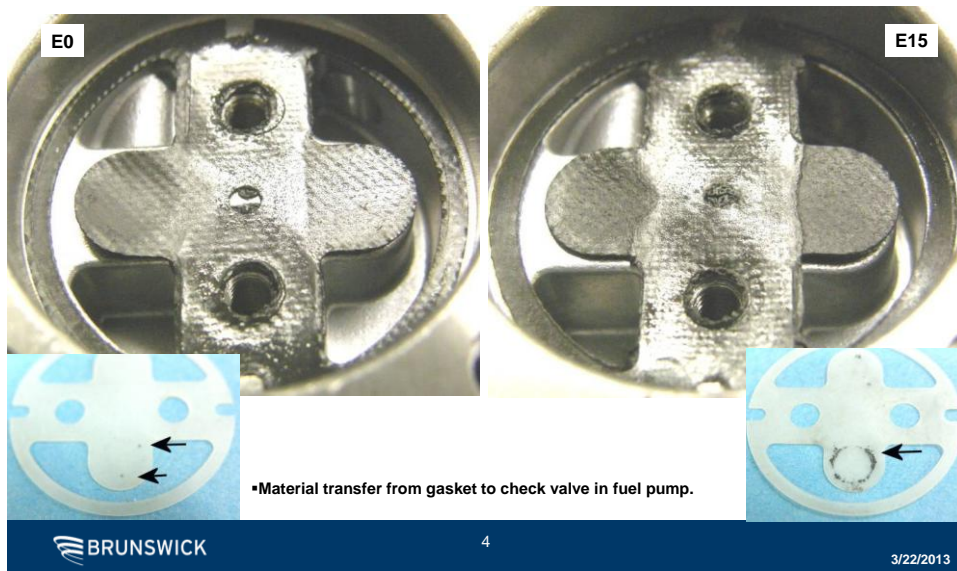
Damage to marine engines also carries implications beyond those applicable to automobiles. If an automobile engine breaks down because of ethanol damage, it is a simple matter to pull over to the side of the road and wait for the tow truck. If a boat engine is damaged, the boater might well be miles at sea. The United States Coast Guard was undoubtedly considering this scenario when it told the EPA in a July 2, 2009, letter that the EPA's proposed waiver to allow the sale of e15 "has raised concerns related to possible reduction in the level of safety for recreational boaters . . . ." As a result, said the Coast Guard, it could not support the waiver to allow e15 usage.

NMMA does not see any benefits in the expanded use of e15. It is certain that if e15 were to become the common fuel in the marketplace, extensive misfueling would occur, with consequent damage to marine and other engines. We do not believe that there would be any benefit to the American consumer as a result of wide-spread availability of e15 blend gasoline. Rather, any American consumer who owns any gasoline-powered equipment, whether boat, snowmobile, motorcycle, ATV, lawnmower, chain saw or weed whacker, would almost certainly incur the expense of repair or replacement of that equipment because of the damage caused by e15 use. In the case of boats, motorcycles, ATVs and snowmobiles, that cost could be in the thousands of dollars per vehicle. These are costs that are totally avoidable by changing the RFS to reflect the knowledge and understanding about ethanol-blended fuels we have gained since 2007.

## Photos from Mercury Marine Outboard Tests

### 9.9HP Carbureted 4-Stroke

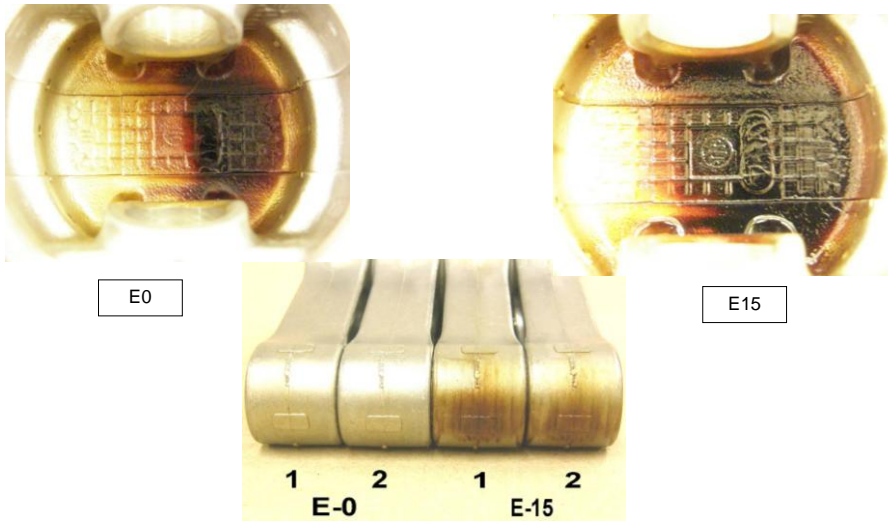
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## 9.9HP Carbureted 4-Stroke

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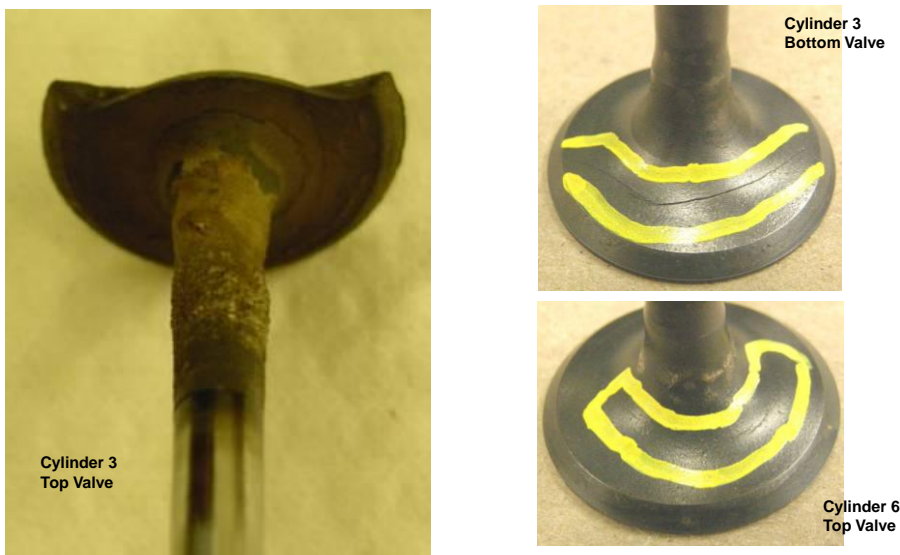


BRUNSWICK

1

1/29/2013

## 300HP Supercharged 4-Stroke



BRUNSWICK

2

1/29/2013

### 300HP Supercharged 4-Stroke

- Carbon deposits may indicate that the E15 engine's pistons and connecting rods were hotter during operation than those in the E0 engine.



BRUNSWICK

3

1/29/2013

### 200HP EFI 2.5L 2-Stroke

Recovered Pieces from Failed Rod Bearing

Undamaged Bearing



Undamaged Rod

Damaged Rod



BRUNSWICK

4

1/29/2013

**Question #3. What are the risks of the introduction and sale of E-15 to the owners of pre-2001 motor vehicles, boats, motorcycles, and other gasoline-powered equipment not approved to use it? How do these risks compare with the benefits of the RFS?**

**Answer:** As mentioned above in answer to Question #2, one of NMMA's member companies tested e15 gasoline blend on new, right-off-the-production-line outboard engines and determined that this blend of ethanol damages engines because of the additional oxygen it provides to the combustion chamber. These findings would be applicable to all marine outboard engines in use today, including those manufactured prior to 2001. There are approximately 7.6 million outboard engines on registered boats today, plus over 1 million personal watercraft whose engines would be affected adversely by higher ethanol blends. The repair and replacement costs if these engines were damaged by e15 blend, would likely reach into the billions of dollars. This is a cost to the American consumer which is easily avoided by changing the RFS so that it does not allow ethanol blends exceeding 10% by volume. There will be outcries from the corn farmers and the ethanol producers, but it seems to NMMA that the United States Government should not enact policies like the Energy Security and Independence Act of 2007 that require the American consumer to purchase a product which will harm the very device that he puts it into. We believe that the RFS, while well-meaning, was enacted before we knew the full effect that increasingly-high blends of ethanol has on gasoline-powered equipment. Now that we know these effects, we believe it is time to change the RFS to reflect the current state of knowledge. Based on our testing, we see no benefits to the ever-increasing amounts of ethanol that the RFS requires be blended into our fuel supply between now and 2022.



April 1, 2013

The Hon. Fred Upton, Chairman  
Committee on Energy and Commerce  
United States House of Representatives  
Washington, DC 20515

The Hon. Henry Waxman, Ranking Member  
Committee on Energy and Commerce  
United States House of Representatives  
Washington, DC 20515

Dear Chairman Upton and Ranking Member Waxman:

With more than 1500 members representing boat, engine, trailer, and accessory manufacturers, the National Marine Manufacturers Association is the largest trade association representing the recreational marine manufacturing industry. We very much appreciate the opportunity to comment on the issue of ethanol blends in gasoline. Our industry has been at the forefront of testing of such blends, working under the auspices of the United States Department of Energy to test the effects of non-ethanol gasoline, gasoline with 15% ethanol content by volume, and gasoline blends containing butanol. Our comments today are restricted to the effects of e15 blend on marine engines.

As you can readily see from the attached comments, we have determined that e15 blends of ethanol would cause considerable damage to the 7.5 million outboard engines in use in this country today. This damage is unnecessary and can be avoided by freezing the ethanol content of gasoline at 10% by volume. NMMA has never been anti-ethanol. We are simply opposed to fuel blends that will ruin our engines and place lives at risk.

If you would like additional information on the tests we conducted or wish to discuss our submission, please feel free to contact NMMA Legislative Director Jim Currie at 202 737-9760 or at [jcurrie@nmma.org](mailto:jcurrie@nmma.org).

Sincerely,

Thomas J. Dammrich  
President

**Executive Committee**

Chairman, NMMA  
Mark Schwabero  
Mercury Marine

Vice Chairman, NMMA  
Joan Maxwell  
Regulator Marine

Treasurer, NMMA  
Bill Watters  
Syntec Industries

Secretary, NMMA  
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Jason Pajonik-Taylor  
Taylor Made Products

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NMMA

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[nmma.org](http://nmma.org)

**Response to House Energy & Commerce Committee  
White Paper #1 on the Renewable Fuel Standard  
Submitted by the  
National Marine Manufacturers Association  
April 1, 2013**

**Question #2: What are the benefits and risks of expanded use of E-15 to automakers, other gasoline powered equipment makers, refiners, fuel retailers, and others involved in the manufacture and sale of gasoline and gasoline-using equipment?**

**Answer:** Outboard engines are perhaps the toughest gasoline engines made, but they are not designed to run on e15 blend gasoline and will be damaged if such an ethanol blend is used in them. No manufacturer of outboard engines warrants their engines to run on an ethanol blend above 10% by volume, and all of them state unequivocally that using an ethanol bend above 10% will void the engine's warranty. The reason for this warning is quite simple: testing has demonstrated that blends at 15% ethanol will absolutely destroy an outboard engine.

Mercury Marine, a division of the Brunswick Corporation located in Fond du Lac, Wisconsin, has been a manufacturer of recreational marine engines since 1939, and it currently makes and sells more marine engines than any other manufacturer in the world. In 2010 and 2011 Mercury Marine tested e15 blend fuel in three different Mercury outboard engines. These tests were conducted at the Mercury Marine test facility in Fond du Lac by Mercury personnel under contract to the US Department of Energy and coordinated by the National Renewable Energy Lab (NREL). The final report was released by the Department of Energy in October 2011 and can be found at the following web site:

<http://www.nrel.gov/docs/fy12osti/52909.pdf>

The objective of these tests was to understand the effects of running a 15% ethanol blend on outboard marine engines during 300 hours of wide open throttle (WOT) endurance testing—a typical marine engine durability test. Three separate engine families were evaluated. A 9.9 HP carbureted four-stroke engine and a 300 HP supercharged electronic fuel injected four-stroke engine represented current products. A 200 HP electronic fuel injected two-stroke engine was chosen to represent the legacy products still in widespread use today. Two engines of each family were evaluated. One engine was endurance tested on e15 fuel, while a second control engine was endurance tested on ethanol-free gasoline.

Ethanol is an oxygenator. E10 fuel has 3% oxygen, while e15 fuel has 5% oxygen. In a typical marine engine this additional oxygen makes the fuel burn hotter, and the higher temperatures can reduce the strength of the metallic components. In addition, because of the chemical interaction, ethanol can cause compatibility issues with the other materials in the fuel systems.

Mercury was able to complete the entire 300 hour test running e15 in the 9.9 HP engine. Test results indicated poor running quality, including the occurrence of engine misfires toward the end of the test.

The poor run quality caused an increase in exhaust emissions. In addition, there were increased carbon deposits in the engine on the underside of the pistons and on the ends of the rods, indicating higher engine temperatures. The photo at the end of this narrative shows the difference in the carbon deposits on the engines run on e0 and e15. Additionally, deterioration of the fuel pump gasket was evident on the e15 engine. This deterioration of the gasket could lead to fuel pump failure, disabling the engine.

The 300 HP four-stroke supercharged Verado engine did not complete the endurance test on e15 fuel. The engine encountered a valve failure after 285 hours of endurance testing. As the photos clearly show, one valve broke apart, which ended the test, and two others developed cracks. These are quality valves constructed of Inconel, a high-temperature alloy. Even so, when Mercury did metallurgical analysis on this engine, it found that the cause of these fractures was deteriorated mechanical strength due to high metal temperature. The next photos show a comparison of the pistons and connecting rods from the Verado engine, also indicating that the e15 test engine operated at elevated temperatures.

The 200 HP two-stroke engine using e15 fuel also failed to complete the endurance test. It failed a rod bearing at 256 hours of testing, resulting in catastrophic destruction of the engine. The photo clearly shows the damage. There was so much damage to the engine that Mercury could not determine the exact cause of failure. Two-stroke engines mix the fuel and the oil and use that mixture to distribute the oil to the critical interfaces such as the bearings and cylinder walls, and ethanol may have an effect on the dispersion or lubricity of the oil mixed with the fuel.

Despite the limited nature of this testing, several significant issues were identified. In addition to the need for more 2-stroke lubrication system testing, more testing is needed to understand how e15 fuel affects marine engines during other operating conditions. Examples would include starting, acceleration/deceleration, and the effect of e15 fuel on marine engines that are stored with fuel in the system over long periods of time, as occurs regularly with marine engines.

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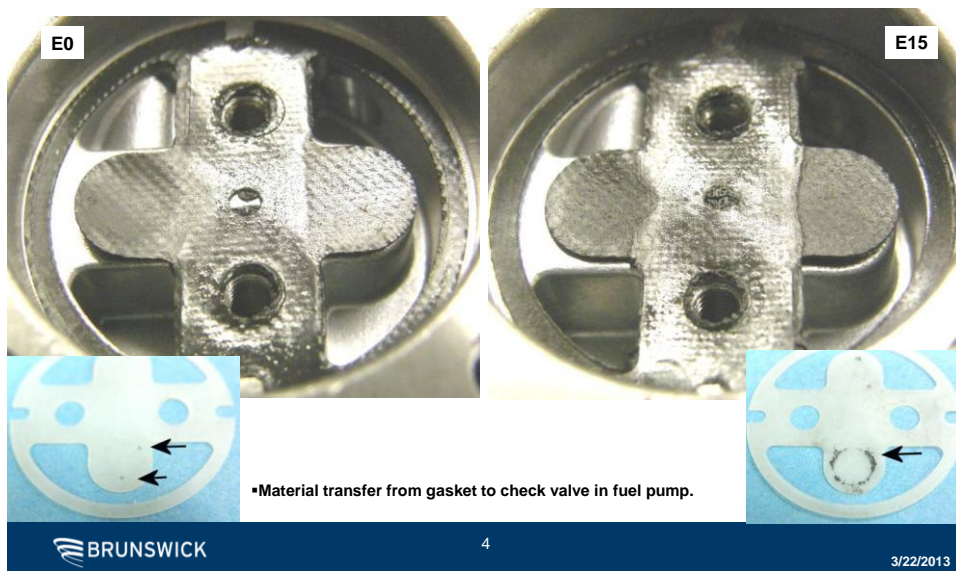
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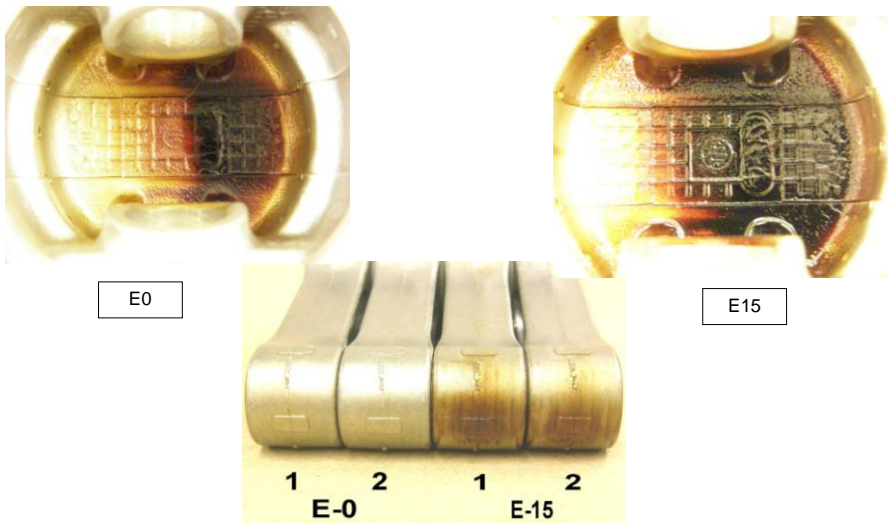
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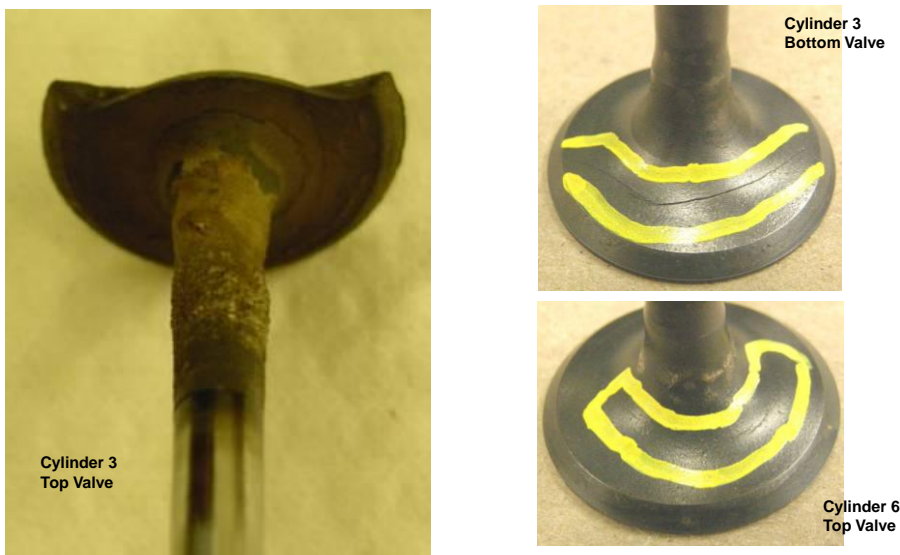


BRUNSWICK

1

1/29/2013

## 300HP Supercharged 4-Stroke



BRUNSWICK

2

1/29/2013



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BRUNSWICK

3

1/29/2013

### 200HP EFI 2.5L 2-Stroke

Recovered Pieces from Failed Rod Bearing

Undamaged Bearing



Undamaged Rod

Damaged Rod



BRUNSWICK

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1/29/2013

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**Answer:** As mentioned above in answer to Question #2, one of NMMA's member companies tested e15 gasoline blend on new, right-off-the-production-line outboard engines and determined that this blend of ethanol damages engines because of the additional oxygen it provides to the combustion chamber. These findings would be applicable to all marine outboard engines in use today, including those manufactured prior to 2001. There are approximately 7.6 million outboard engines on registered boats today, plus over 1 million personal watercraft whose engines would be affected adversely by higher ethanol blends. The repair and replacement costs if these engines were damaged by e15 blend, would likely reach into the billions of dollars. This is a cost to the American consumer which is easily avoided by changing the RFS so that it does not allow ethanol blends exceeding 10% by volume. There will be outcries from the corn farmers and the ethanol producers, but it seems to NMMA that the United States Government should not enact policies like the Energy Security and Independence Act of 2007 that require the American consumer to purchase a product which will harm the very device that he puts it into. We believe that the RFS, while well-meaning, was enacted before we knew the full effect that increasingly-high blends of ethanol has on gasoline-powered equipment. Now that we know these effects, we believe it is time to change the RFS to reflect the current state of knowledge. Based on our testing, we see no benefits to the ever-increasing amounts of ethanol that the RFS requires be blended into our fuel supply between now and 2022.

The Honorable Fred Upton  
Chairman  
Energy and Commerce Committee  
U.S. House of Representatives  
2125 Rayburn House Office Building  
Washington, DC 20515

The Honorable Henry A. Waxman  
Ranking Member  
Energy and Commerce Committee  
U.S. House of Representatives  
2322A Rayburn House Office Building  
Washington, DC 20515

*via email at: [rfs@mail.house.gov](mailto:rfs@mail.house.gov)*

April 5, 2013

Dear Chairman Upton and Ranking Member Waxman:

Novozymes, a leader in biotechnology and innovation, is pleased to respond to your request for information regarding the Renewable Fuel Standard (RFS) through your series of white papers. The RFS was enacted to incentivize diversification in our transportation fuel supply and its working.

Novozymes is a technology and science company; we embrace and encourage both. We have nearly 6,000 employees worldwide, with more than 1,000 employees across America – including California, North Carolina, Virginia, Nebraska, Wisconsin and Massachusetts. Cellulosic biofuels is our largest research effort. We invest 14 percent of our annual sales back into research and development. Cellulosic biofuels is our largest global R&D effort with more than 150 employees dedicated to its development. We have more than 7,000 patents and 700 products at work in 130 countries. Our enzymes remove trans-fats in food, lower the temperature needed to wash a consumer's clothes and convert biomass, from switch grass or corn stover, into biofuels. Over a five-year period, our work has reduced the cost of the enzymes required to make advanced biofuels by 90 percent. Our solutions also help companies use fewer chemicals, raw materials, energy and water, and generate less waste. Our technologies save our customers and consumers energy and money.

Our US investment – and that of many industry peers – is driven in large part because of the Renewable Fuel Standard. Just last year Novozymes invested more than \$200 million in bioenergy in the US and inaugurated the largest enzyme plant dedicated to renewable fuels in the United States with the opening of its advanced manufacturing plant in Blair, Nebraska. The plant created 100 career positions and 400 construction jobs, and specializes in enzymes for both the conventional and advanced biofuel markets. Biorefineries across the world – in the United

States, China, Italy and Brazil – will use enzymes made at our Nebraska Plant. In fact, global production capacity of advanced biofuels is estimated to reach approximately 15 million gallons in 2012 and 250 million gallons by 2014.

The RFS was expanded as part of the Energy Independence and Security Act of 2007 (EISA), which was signed by President Bush. It created specific requirements for advanced biofuels, including the biomass-based diesel, advanced, and cellulosic biofuels pools. The clear vision of Congress in drafting this statute was to encourage the expansion of convention biofuels and the commercialization of an entirely new range of fuels from a broad and diverse array of feedstocks. EPA's consistent and carefully balanced implementation of the RFS has provided advanced biofuel developers and investors with confidence that if they can produce advanced and cellulosic biofuels, there will be market access for these fuels.<sup>1</sup>

Despite this expansion, the lack of market access created by the obligated parties is impacting that policy and the American consumers it means to serve. The so called "blend wall" represents a series of barriers created by those parties to prevent competitive, alternative fuels from gaining full access to the marketplace.

### **Questions for Stakeholder Comment**

- 1. To what extent was the blend wall anticipated in the debates over the Energy Policy Act of 2005 and the Energy Independence and Security Act of 2007?*

When the RFS was adopted in 2007, it was clear that over time higher blends of renewable fuel and new infrastructure would be needed to satisfy the goals of the policy.

RFS, in fact, set out a two-part deal: The renewable fuel industry would innovate and make the fuel cost-competitive. Done (see question 5 for details). The oil companies, who control the infrastructure, would determine how to integrate the new fuel in a fair way. Not done.

The "blend wall" is a fabricated obstacle to halt the advancement of alternatives to oil in the nation's transportation fuel supply. As an example, E15 is approved and ready for use today, as is E85. Attempts to claim that changes in demand for oil due to the economic downturn or 2017 CAFE standards now require adjustments to the legislation do not reflect reality and should be rejected.

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<sup>1</sup> "The value proposition for cellulosic and advanced biofuels under the US federal renewable fuel standard." Ind. Biotech. J. 7(2), April 2011

2. *What are the benefits and risks of expanded use of E-15 to automakers, other gasoline powered equipment makers, refiners, fuel retailers, and others involved in the manufacture and sale of gasoline and gasoline-using equipment?*

Ethanol and other alcohol fuels (such as butanol) have higher octane ratings than gasoline. This increased octane could actually boost fuel economy in future car models if automakers concentrate on developing smaller engines with higher compression and turbocharging, according to a 2009 report by Sandia National Labs. Many of today's cars run best on higher octane premium and mid-grade fuel blends, as recommended in their owners' manuals.

Additionally, ethanol has been considerably cheaper than gasoline on the wholesale market for some time. It provides retailers the ability to offer a less expensive product to their customers, giving them leverage over competitors. More alternatives provide consumers choices at the pump.

3. *What are the risks of the introduction and sale of E-15 to the owners of pre-2001 motor vehicles, boats, motorcycles, and other gasoline-powered equipment not approved to use it? Are there risks to owners of post-2001 vehicles? How do these risks compare to the benefits of the RFS?*

On June 23, 2011, EPA finalized regulations to help prevent misfueling of vehicles, engines, and equipment not covered under the E15 partial waiver to ensure owners of pre-2001 motor vehicles, boats, motorcycles, and other gasoline-powered equipment do not mistakenly fuel with E15. Provided consumers follow the instructions they should avoid any complications. This will allow the RFS to continue the benefit of providing cleaner burning, domestically produced biofuels which helps lessen our dependence on foreign oil.

4. *What is the likely impact, if any, of the blend wall on retail gasoline prices?*

There is no blend wall so it should have no impact on retail gasoline prices. And today, ethanol is priced approximately \$0.60-0.70 per gallon below the wholesale costs of gasoline.

EIA has already determined why gas prices are high,<sup>2</sup> the oil refining industry has reduced capacity,<sup>3</sup> oil prices are rising, while the crack spread has gone to record highs,<sup>4,5</sup> giving oil companies a \$1 gallon per gallon profit margin<sup>6</sup> on fuel and allowing the industry to have continued record profits.

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<sup>2</sup> <http://www.eia.gov/todayinenergy/detail.cfm?id=10111>

<sup>3</sup> NYMEX October RBOB crack spread widens as USGC refineries slowly restart, <http://www.platts.com/RSSFeedDetailedNews/RSSFeed/Oil/6613396>

<sup>4</sup> <http://www.bloomberg.com/quote/CRKS321C:IND>

<sup>5</sup> <http://finance.yahoo.com/q?s=ZXYJ12.NYM>

<sup>6</sup> <http://blogs.wsj.com/marketbeat/2013/02/27/gas-prices-stocks-approach-danger-zone/>

Oil is a global commodity with prices dictated by external forces like OPEC, ensuring that even as domestic production of oil rises, our economy, and every American family remains vulnerable to shifts in the price of oil. To continue on our path toward greater energy security, the United States must continue our efforts to diversify our transportation fuel supply and eliminate our overreliance on oil.

*5. What is the timing of the implementation challenges related to the blend wall? Will some entities face difficulties earlier than others?*

Like renewable fuel producers and auto manufacturers, the transportation fuel blenders and marketers have had since 2007 to plan to meet their obligations. Every year they have several options to comply with the Standard; blend and sell E15, E85 or any level in between; or meet their obligations by blending advanced biofuels like biodiesel or sugarcane ethanol, which they have done every year since the standards enactment. They can also buy and sell paper RINs or delay a portion of their obligation to the next compliance year.

Congress anticipated that the private sector would respond to the market signals of the policy and invest both to develop and commercialize new products that would be required to meet the vision of the RFS and to install the delivery systems necessary to implement these changes. Congress' expectation that private industry would rise to the challenge was not unreasonable, as the country effectively made this type of transition before, moving from leaded to unleaded gasoline. The challenge presented by the RFS has been embraced by the renewable fuel sector. Since 2007, first generation production has increased and displaced 10 percent of petroleum in our fuel supply, with 13 billion gallons blended in 2012. The future growth in the sector lies in the cellulosic and advanced spaces where billions of dollars have been invested in research and development, testing, and commercialization of an entire industry that did not exist in 2007.

Today, the industry has put steel in the ground on more than 22 facilities including our \$200M enzyme facility in Blair, Nebraska and producer companies including INEOS Bio in Vero Beach, Florida; KiOR in Columbus, Mississippi; Abengoa in Hugoton, Kansas; POET-DSM in Emmetsburg, Iowa; and DuPont in Nevada, Iowa. Additionally, the industry has filed over 30 pathway reviews ongoing at EPA, and just 10 of those have been approved. To ensure that blends above E10 are available for use, the industry sought and received approval of E15, after completion of the most extensive testing ever conducted with a fuel approved in the United States. Automakers are also rising to the challenge, having approved E15 for use in vehicles model year 2001 and beyond and selling more than 8 million flex-fuel vehicles, capable of using E85 wherever it is sold.

As mentioned earlier, Congress' call as presented by the RFS was not embraced by the oil industry. Conversely, it has sought to halt the advancement of renewable fuel every step of the way since 2007. The industry has steadfastly refused to install low-cost infrastructure to make higher blends of renewable fuel available to consumers at the pump. It has discouraged station owners from implementing these changes on their own. It has intervened to slow the approval of new fuels and mire the regulatory process in legal paralysis. It has perpetuated myths regarding E15 based on faulty, industry-funded studies, ignoring the reality that higher blends of ethanol like E20 are in use throughout the world today.

6. *Could the blend wall be delayed or prevented with increased use of E-85 in flexible fuel vehicles? What are the impediments to increased E-85 use? Are there policies that can overcome these impediments?*

There is no blend wall. Blending and selling E85 would allow obligated parties to meet the standard for compliance for years to come. But E85 is just one of several options for compliance as outlined above.

Higher fuel blends are approved for use and vehicles are on the road, waiting for the opportunity to use these products. There is no blend wall. And the increase in adoption of flex fuel infrastructure and vehicles will aid the opening of the market. One legislative proposal to speed the deployment of flex fuel vehicles is the Open Fuel Standard.

7. *Is E-15 misfueling unavoidable? Are there lessons from the labeling and dispensing of diesel, E-85 and other fuels that prevent their misfueling that can also be applied to E-15? What specific actions are companies taking to address potential misfueling concerns under MMPs?*

There are lessons from any and all of the different transportation fuels we have offered over the years in this country. As with all fuel new types, educating consumers is necessary and should be a priority.

We have changed our nation's fuel supply and delivery system before with the transition to unleaded gasoline. In fact, the first Model T that was sold in 1908 ran on ethanol. Right now multiple fuel types are commercially available for purchase from unleaded, to diesel to premium, and consumers navigate the options just fine.

8. *Can blend wall implementation challenges be avoided without changes to the RFS? Is the existing EPA waiver process sufficient to address any concerns? If the RFS must be changed to avoid the blend wall, what should these changes entail? Should any changes include liability relief or additional consumer protections for addressing misfueling concerns?*

There is no blend wall. The only way to ensure that this country continues to reduce our reliance on imported petroleum and increase our use of domestically produced renewable fuels that are cheaper, lower in greenhouse gas emissions and better for our air quality and health is to keep the RFS in place as enacted because it's working.

Obligated parties simply need to increase the amount of available renewable fuel they blend and their obligation will be met. Missed obligations can be avoided through the flexibility already provided by the RFS. As such, Novozymes strongly believes no legislative changes to the RFS

are necessary and respectfully requests that the Committee consider the impact wavering support for a long term policy like the RFS has on private industry investing in this country and its communities.

*9. Have the 2017 and Later Model Years Light Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy standards for cars and light trucks changed the implementation outlook of the RFS?*

No, even if gasoline consumption would have remained as predicted, blenders and marketers would have had to make adjustments to comply with the RFS.

*10. What other methods, including the use of drop-in fuels, are available to industry to ease the challenge posed by the blend wall?*

There is no blend wall. “Drop in” biofuels have a large role to play in the life of the RFS and the goals it aims to achieve. We should be sure we understand market access issues, if they exist, for ALL non-petroleum transportation fuels to ensure clear pathways to adoption by consumers.

In addition to their use for light duty transportation, aviation biofuels as drop-ins are a powerful solution. Currently, sustainable aviation biofuels, derived from biomass-based plant material and waste fats, are approved for use in jet engines in an up to 50 percent blend. This fuel is a drop-in substitute for fossil-based petroleum currently used in aviation. Some commercial airlines are already flying on blends of sustainable aviation fuel, and aviation is well-suited for rapid deployment of drop-in biofuels. The commercial aviation industry has system-wide advantages including the ability to use current infrastructure: drop-in biofuels utilize the same pipelines and tanks as petroleum. It also has highly concentrated nodes of supply and demand, where the largest 40 U.S. airports account for more than 90 percent of jet fuel used by commercial aviation. Thus, if sustainable aviation biofuel producer can deliver to the 40 large airports, they have access to nearly the entire 17 to 19 billion gallon-per-year commercial jet-fuel market.

*11. What are the impacts on renewable fuel producers if the RFS is changed to avoid the blend wall?*

If the RFS is changed to avoid the non-existent blend wall, 400,000 American jobs will be at risk. Children who depend on the income from those jobs will be at risk. Communities will be destabilized. The tax base will shrink and national economy will contract. Investment will go overseas. Research and development will slow, or also go overseas. Foreign countries will get ahead in the energy race.

In short, a portion of America’s economy and livelihood will shut down.

In 2007 the US government asked technology companies to help solve a problem. The biotechnology and biofuels communities answered the call and built up 15 billion gallons of ethanol in record time, they also developed and commercialized first of kind innovative



technology to convert cellulosic biomass in to renewable fuels and technology to develop high carbon advanced biofuels. Even the discussion about the possibility of opening up the statute and changing the law has a chilling effect on investment. Without stability in this policy, investors simply won't take the risk, and both technology development and commercialization will slow.

In reality, opponents aren't interested in making the policy better – they're interested in killing it. Novozymes' goal is to ensure that doesn't happen.

### **Conclusion**

As the Committee continues its examination of the RFS, Novozymes would encourage you to look into efforts by obligated parties to stop the development of the biofuels industry and explore ways for Congress and the government to help promote continued growth in domestic renewable fuels. We look forward to working with you on that effort. Investments, like ours in Nebraska, have been made on the basis of a law passed by Congress and regulations promulgated by EPA. NZ has developed and is manufacturing in the US enzymes that convert cellulosic biomass. We invest in the US because of the RFS.

The RFS is working and needs to be maintained. The alternative is to leave consumers at the mercy of volatile gasoline prices; halt investments in the U.S. developed next generation of biofuels; halt the only significant progress the U.S. has made on energy or climate policy in 40 years; and halt saving consumers' money. Americans cannot afford that alternative.

If there is any additional information Novozymes can provide, please do not hesitate to ask.



Cc: Congressman Lee Terry  
Congressman G.K. Butterfield